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No. 22

November 30, 1918

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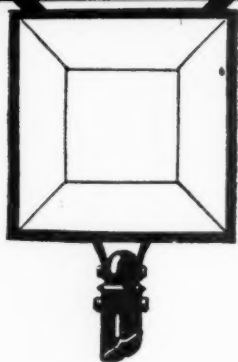
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Volume XLV

NEW YORK, NOVEMBER 30, 1918

No. 22

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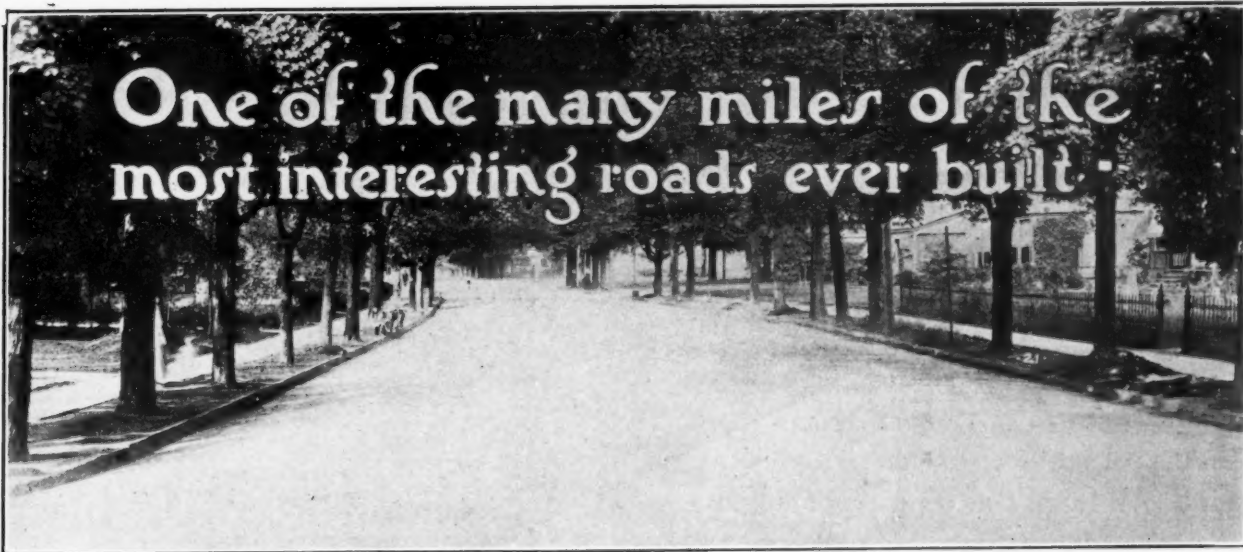
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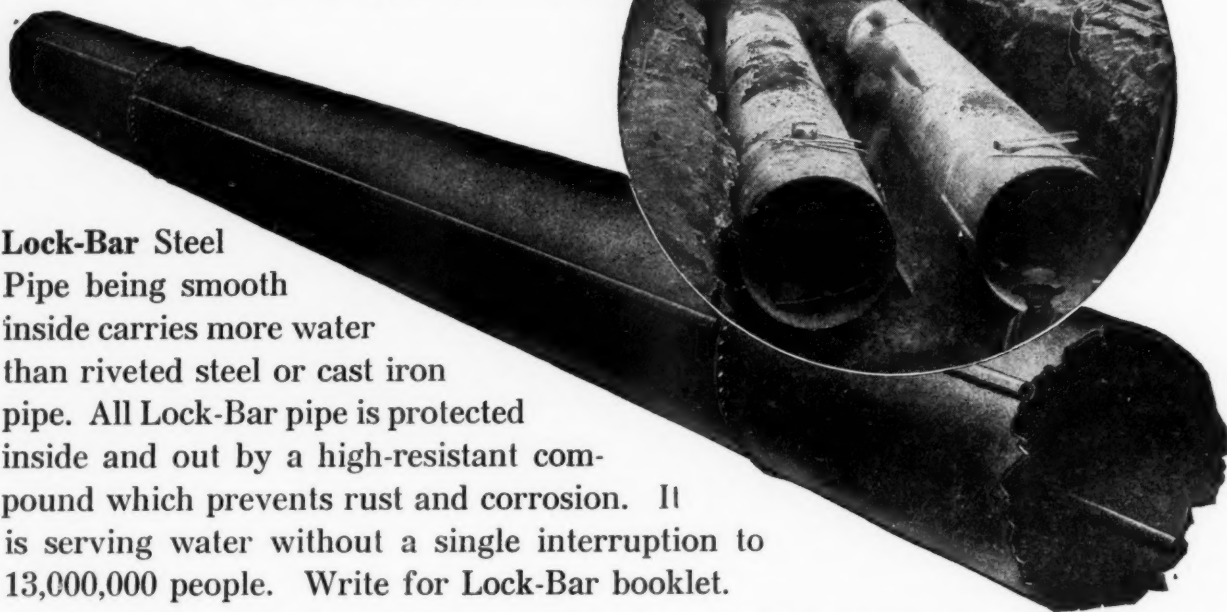
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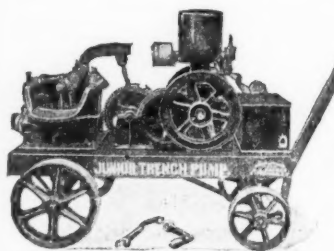
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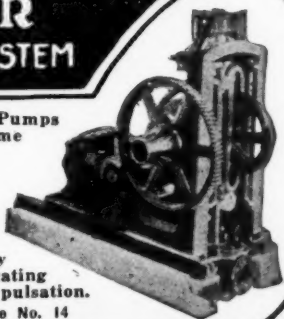


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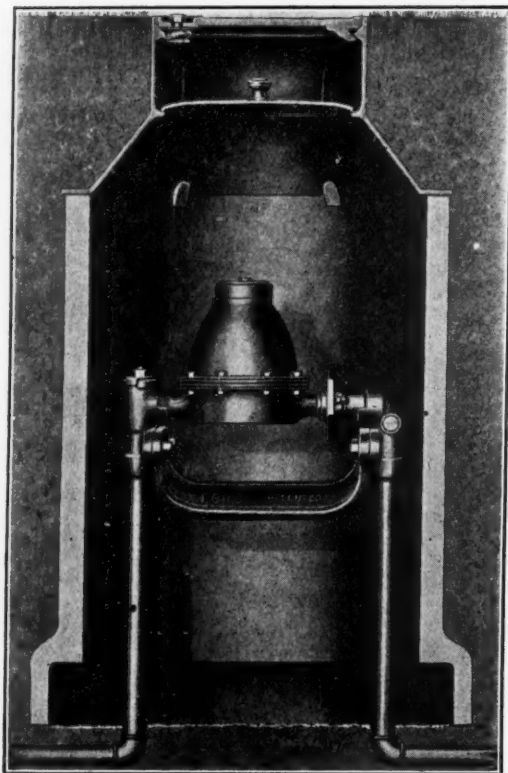
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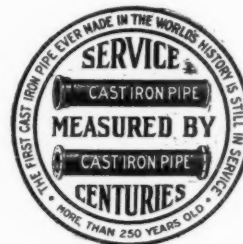
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Municipal Journal

Volume XLV.

NEW YORK, NOVEMBER 30, 1918

No. 22

EXTRA-CANTONMENT ZONE SANITATION

How U. S. Public Health Service Endeavored to Secure Healthful Conditions and Surroundings at Camp Bowie, the Aviation Fields Nearby and the Adjacent Areas—Anti-Malarial Work—Urban and Rural Sanitation.

By W. A. HARDENBERGH.*

When a million men were ordered into military training in the summer of 1917, it was thoroughly realized that intensive health work would be necessary to adequately protect them from disease. It was also realized that to sanitize only their actual camping sites would not be sufficient. Disease germs will not stop at the camp border; the soldier is bound to mingle with the civilian population. The same restaurant, the same barber-shop, and the same movie attract the soldier and the civilian. To protect the one it is necessary to protect the other. Insanitary conditions a hundred yards, or a mile, from the camp border may produce an epidemic as quickly as similar conditions within the camp limits.

To the United States Public Health Service was entrusted the work of sanitation in the areas outside the cantonments, while the army authorities were to do similar work within the camp limits. Medical officers and other trained personnel of the Service were at once

this great campaign to conserve the health of the soldiers. In this article, the work in the zones around Camp Bowie and the three aviation fields near Fort Worth, Texas, will be described. The work at this particular station has been chosen for illustrative purposes, not only because of the writer's familiarity with the work there, but also because practically all phases of preventive sanitation have been applied in the campaign carried on there.

Prior to the location near Fort Worth of Camp Bowie and the three aviation fields, the health department of that city was about on a par with that usually found in a southern city of ninety thousand population. A small corps of sanitary inspectors was maintained, but there was little power to enforce rulings and not much money available for health purposes. The state health department was practically a negligible quantity so far as sanitation work near the cantonments was concerned.

The Public Health Service sent a small force to Fort



SECTION OF BIGGEST SLOUGH, AFTER DRAINAGE.
One of a string about a mile long.

ordered to the cantonment areas to institute and vigorously carry out necessary health measures for the protection of the health of the troops. It was intended not that the Service officers supplant, but that they assist local health machinery, and serve as adjuncts during the period of the emergency.

Work has been carried on by the Public Health Service at approximately 40 stations, comprising camps, cantonments, aviation fields and centers of war industries. While the work has varied with the location (as north or south), with the various local needs and phases, and with the size of the city and the strength of the local health departments, the same basic principles have been applied throughout and a description of the work at one station will serve to illustrate what is being done at all in

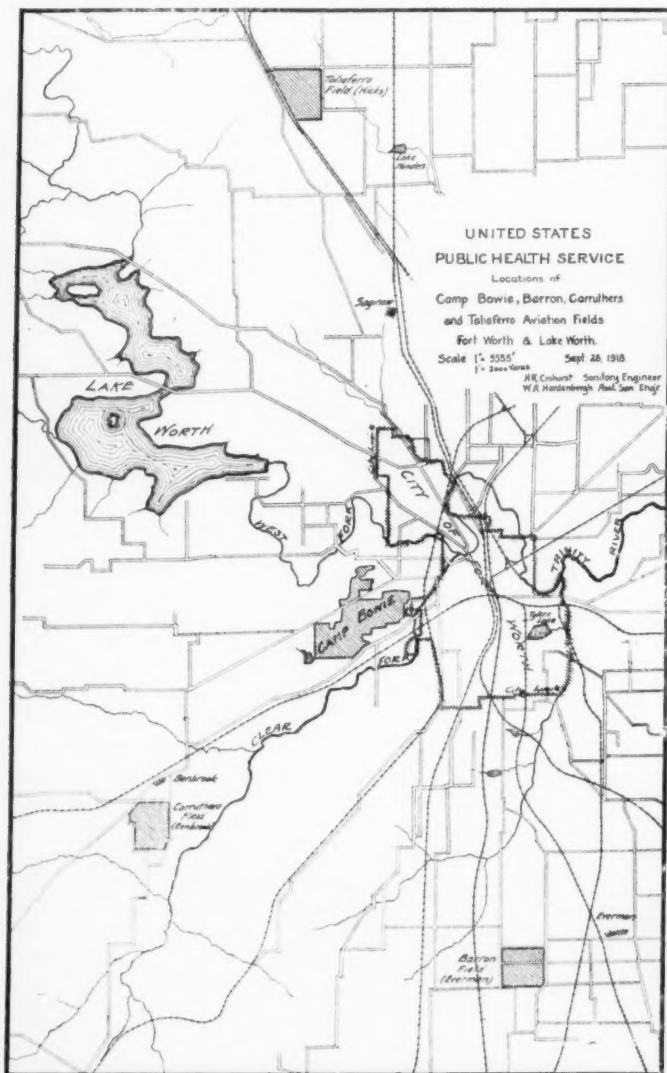
*Assistant Sanitary Engineer, United States Public Health Service.

Worth in the fall of 1917, but vigorous work was not started until the spring of 1918, when a campaign was begun which included all phases of work: Urban and rural sanitation to eliminate the filth-borne diseases; anti-malarial; food and restaurant inspection and regulation; dairy inspection and regulation; control of communicable diseases; public health nursing; venereal control; school inspection; and free inoculation and vaccination against typhoid and small-pox. The Public Health Service personnel to carry on this work has included a passed assistant surgeon in charge, one or two assistant surgeons, from one to three acting assistant surgeons, one scientific assistant, one sanitary engineer, one assistant sanitary engineer, nurses and inspectors. In addition to these, the Red Cross, through Sanitary Unit No. 23 which is assigned to this station, furnishes a laboratory, a chief sanitary inspector and other officials.



SECTION OF LARGEST SLOUGH AFTER DRAINAGE.
Water here was very foul and five feet deep.

Sanitary inspectors are paid by the city, by the Red Cross or by the Public Health Service, all three organizations co-operating in this field. In addition to being in charge of the Public Health Service work, the passed assistant surgeon, as Medical Officer in Charge, has been made director of the Red Cross sanitary unit, assistant city health officer and assistant county health officer. In this way local funds and efforts can be correlated with the work of the Federal authorities. He has also been made a special disbursing officer of the Treasury and through this is enabled to pay, directly and promptly by treasury check, laborers employed on anti-malaria and anti-typhoid work, thus greatly facilitating operations in these fields.



Finally drained into large gravel pit, which was oiled
FORT WORTH AND THE EXTRA-CANTONMENT AREA.

So wide has been the scope of the work at this station and so varied have been the activities undertaken, that they can best be described by telling separately what has been done along each line of work.

ANTI-MALARIAL.

While malaria has never been prevalent to any great extent around Fort Worth, there is danger that, with the transfer of men from one camp to another and from malarial to non-malarial sections where there are mosquitoes which are capable of carrying the malarial parasite, this disease may be introduced into regions ordinarily non-malarial. To guard against this danger and to protect the soldiers from any possibility of exposure to malaria, the Public Health Service is fighting to virtually eliminate the mosquito from extra-cantonment zones.

All mosquitoes breed only in water, though the character of the breeding places of the anopheles, which is the carrier of the malarial parasite, and of other species is different. The anopheles breed only in relatively clean water, in grassy pools, generally in out-of-the-way places, while other species, notably the culex, the ordinary domestic mosquito, may develop in dirty water and close to houses, as in rain-water barrels, drains, cess-pools and open sewers.

From investigations made by Service engineers, notably LePrince and Griffith, it has been developed that mosquitoes of the anopheles species are capable of flying as much as 6,000 feet if necessary to obtain a blood supply. Plans for anti-malarial work contemplated, therefore, treatment for all mosquito producing areas within a mile of the limits of the camp and aviation fields. The area

within these 1-mile zones and in which anti-malarial work was carried on at Fort Worth totaled 38 square miles.

In this work, three main methods of control have been used—drainage, oiling and fish-control. While the complete removal of all standing water offers the ideal solution, this is not possible in all cases and other methods must be employed. Oiling, while in general adopted only as



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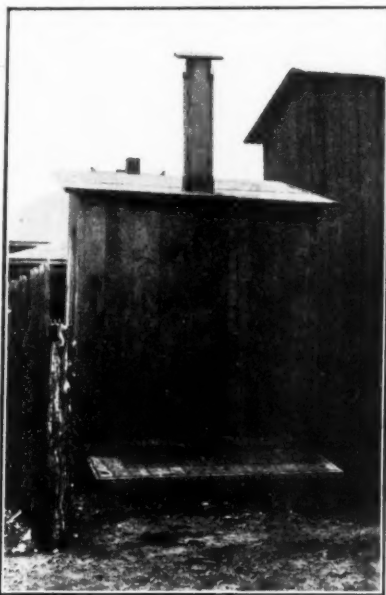
PROLIFIC BREEDING PLACE OF MOSQUITOES.
and kept clean around the edges.

a temporary expedient because of its cost, is necessary where drainage or fish control cannot be used successfully.

Specially troublesome problems peculiar only to that locality will be found at every camp. At Camp Bowie long and deep sloughs, in some cases cut off from the river by levees, and the river itself presented the most difficult problems. The Clear Fork and the West Fork join at Fort Worth to form the Trinity river. Camp Bowie, situated between the forks, had, within the one-mile zone, 20 miles of winding river. Dams on both forks so cut down the velocity of flow that, during much of the summer, the river was practically dead water, with the grass-and-weed-grown banks offering excellent breeding shelters for mosquitoes. To overcome this, it was decided to clean, bringing to a sharp and grassless edge, all river banks within the mile zone, comprising approximately 40 miles. This work was done early in the season and the result, aided by fish control by minnows in the river, has been satisfactory.

On the edge of the camp and between it and the city was located a string of sloughs ranging in depth to five or six feet. Into these sloughs had been discharged sewage from the camp until they were practically cess-pools or septic tanks, and a nuisance, in addition to being prolific breeders of *Culex* mosquitoes. At another place, where drainage and wash-water from the camp was allowed to spread over a meadow, with practically no natural drainage, anopheles were produced in great numbers. These places, cut off from the river by high ground, presented a difficult problem. All but one were finally drained into the river by the construction of a ditch about $1\frac{1}{2}$ miles long and 6 feet deep in places. The remaining slough was drained into a large gravel pit, the edges of which were kept clean and the surface oiled weekly.

With the completion of the river bank cleaning and the drainage of the sloughs, conditions around camp were considerably relieved, although washwater and sewage streams flowing from Camp Bowie and from the aviation fields demanded treatment.



REAR VIEW OF CONCRETE VAULT PRIVY, SHOWING FLUE OR "PERISCOPE."



QUANTITY CONSTRUCTION OF SANITARY PRIVIES. Making boxes and cans for urban sanitation work.



UNSANITARY PRIVIES NEAR CAMP BOWIE. Excreta exposed to flies, chickens and other animals. A surface well a short distance away in the rear.

The work on these consisted mainly of channel-cleaning to allow free flow and to prevent the formation of pools of still water where mosquitoes might breed. In all about 170,000 feet of this work was done. In draining the sloughs, 60,000 feet of fairly heavy ditching was necessary.

Gravel pits were numerous around Camp Bowie and formed a considerable problem during the period of wet weather. Most of these were finally drained vertically. A pit was sunk through the impervious layer usually found underlying the gravel deposit, and dynamite discharged to shatter this layer over a wide area. Lower pervious layers then took up the water. This method was cheap and successful when the rainfall was not too heavy.

Roadside ditches possessed threatening potentialities if rains should follow at less than week intervals. A Martin ditching machine was employed to clean these ditches. A foreman, a helper and three teams of mules with drivers were used on the ditcher and the usual day's work averaged a mile and a half. A total of 200,000 feet of roadside ditches were cleaned.

Oiling was necessary during the summer as a temporary expedient while work was in progress. There were also places where, for financial or other reasons, it was not expedient to completely drain some of the larger pools. Despite fairly good fish control, some oiling was necessary. Because of cattle tracks, oiling was also necessary where cattle had access to streams and ditches, and usually on the sewage streams from camp and from the aviation fields, as here the flow was greater on certain days, as Saturdays and Sundays, and pools frequently formed where breeding was observed.

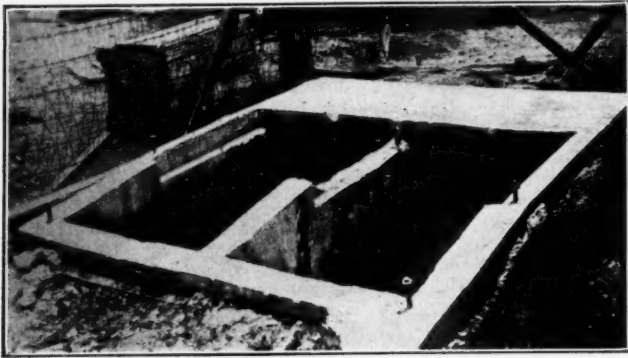
The cost of the river bank cleaning averaged three-quarters of a cent per foot for the entire work. The cost of cleaning roadside ditches with the Martin ditcher was about one-third of a cent per foot. The cost of ditching and channeling has varied from less than one cent to as high as 18 cents per foot. The cost of oiling has averaged 14 cents per gallon. This cost does not include the cost of the oil, which has been donated by the city, but does include the cost of mixing the heavy crude oil with kerosene, hauling the oil to the field and applying. The mixing is a large item in the cost; if instead of adding kerosene, a higher grade of oil could be applied without cutting, it probably could be used more cheaply. The oil is applied by the Myers Panama sprayer. About 40 gallons of oil is applied per mile of ditch.

The total cost of the work, including the purchase of two Ford motor trucks, coal oil, tools, etc., has been about \$18,000. Work was started early in May and completed about the middle of July, 100 men being employed

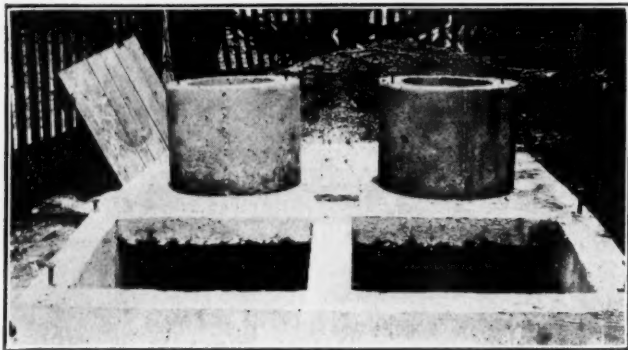
at times. The men were paid \$2.25 to \$2.75 per day, foremen \$4 and teams \$7.

URBAN SANITATION.

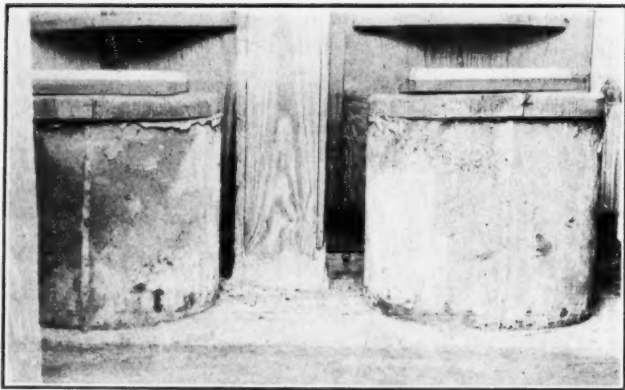
Though anti-typhoid inoculation has practically eliminated typhoid from the army, it is still rife among the civilian population. Moreover, typhoid is but one of the filth-borne diseases, against most of which there is not a preventative inoculation. The control of these diseases demands a safe method of excreta disposal, whereby infectious material will be prevented from access to food and water supplies and protected from the fly.



A DOUBLE VAULT, WITH TOP AND RISERS NOT YET BUILT.



REAR VIEW, SHOWING VAULT AND RISERS.



TWO CONCRETE RISERS WITH CLOSELY FITTING COVERS, AND FLUE.

In Fort Worth, as a beginning, immediate steps were taken to enforce the ordinance relative to sewer connections, and since work began in May, 2,000 sewer connections have been made. To reach those homes not accessible to the sewers, an ordinance was passed requiring the installation of a sanitary privy, the type of privy being specified. This consists of a fly-proof, tight wooden box with a screened opening in front and a connecting flue pipe behind, which extends above the top of the old

privy house for the purposes of ventilation. Tight metallic cans, 15 inches in diameter and 15 inches high, are placed in the box for the catchment of excreta. The boxes and can are uniformly made according to specifications and installed in the old houses. This work has been done under the direction of the city, the installation costing \$8.50. The privies are scavenged weekly at a cost of \$1.50 per quarter, the full cans being removed and clean cans placed in their stead. The cans to be scavenged are hauled to disposal stations, which are large concrete risers built over sewer mains, and there thoroughly washed and deodorized. Nearly 4,000 of these privies have been installed in Fort Worth, while the incorporated towns of Niles and Polytechnic, adjoining Fort Worth, have also installed the system.

RURAL SANITATION.

In the rural districts where there is no scavenger system, the box and can type of privy is not practicable. As it is not safe to assume that each rural inhabitant will give his privy the care required by this type, a more fool-proof type is required. This requirement and many others are met by the double compartment concrete vault privy, which is being installed within a zone five miles wide around Camp Bowie and the three aviation fields.

This type consists of two water-tight vaults, each 22 inches long on the bottom, 45½ inches long on the top, 23 inches wide and 42 inches deep, the rear wall slanting



CLEAN-UP WORK IN THE CITY.

outward and backward. Self-falling lids are placed over the two concrete risers and a flue pipe for ventilation extends through the roof. A back trap door is placed over the rear of the vault and behind the building. This is bolted down and is raised only during the process of cleaning. But one compartment is used at a time, the lid of the other being nailed down. When the first compartment is filled, the second is used. The storage, with the disinfectant added during the period of use, tends to change the contents to a harmless material. The vault is fly and water-proof.

In order to facilitate the building of the privies and to insure against errors in construction, the Public Health Service is supplying the foremen to supervise the construction, the property owners being called upon to furnish the material and the common labor. Of late, in this district, the property owners have been called upon to pay the estimated cost of the labor, as computed from costs covering the construction of several hundred vaults, and this money is used to pay the laborers who work under the direction of the Service foremen. The forms for the concrete, tools, etc., are furnished by the county or city. The average cost of these privies complete is \$32 to the property owner, while the cost of supervision averages \$3 each.

In addition to the privy construction in the 5-mile

zones, by arrangement with the city which controls Lake Worth (the source of the city water supply), all camps and residences around the lake have been compelled to safeguard the water supply of the city by the installation of these privies. Up to November 1, 649 concrete vault privies had been installed, of which 289 were in the Lake Worth district.

(To be continued)

WATERWORKS OPERATION

Methods Used for Thawing Services and Mains— Heating by Flame, by Hot Water, Steam and Electricity—Apparatus Used.

The methods employed for thawing services, mains and hydrants may be generally classified as those employing the heat of fire, those using hot water or steam, those using electricity and those using salt, alcohol or other material causing thawing by chemical action. In some instances, instead of thawing a main or service pipe, the frozen pipe is removed bodily and a new one inserted in its place, and this is generally necessary when the pipe has been burst by freezing water.

As previously stated, the only preventive of freezing (other than the inadmissible one of letting water flow through it continuously) is to place the pipe below the reach of frost; and a pipe that freezes once is apt to freeze again unless lowered. For this reason, Superintendent McReynolds, of Colorado Springs (see Municipal Journal for May 25, 1918), does not believe in thawing by electricity or any other method that does not require digging down to the service, and would require that any service that freezes be lowered at the time it is thawed. If this is not done, the consumer is very likely to keep water running through the service for the rest of the winter. If a consumer can have his service thawed in a few minutes at a cost of \$2 or \$3, he is liable to run chances of its freezing again, rather than pay the cost of lowering it. An objection to the practice of thawing by digging up is the time and labor involved and the impracticability of attending within a reasonable time to the hundreds of services that freeze during one cold night in some cities. In such cases, however, the department or company might thaw by electricity but refuse to furnish water during the following winter unless the service had been lowered in the meantime.

In any method of thawing, an outlet for the water should be left by opening a faucet or otherwise, so that as soon as the thawing has effected a passageway for water through the frozen section, no matter how small this passageway may be, water may begin to flow through it and thus aid in the thawing. In fact, in the case of water mains it probably never occurs that all of the ice is thawed by the application of heat from outside, but the greater part of it is thawed by the flowing water after a passageway has first been opened through.

HEATING BY FLAME.

Applying flame direct to either main or service pipe generally requires digging up the pipe, which is expensive, and most superintendents prefer one of the methods that do not require this. Digging down to the pipe, however, has two very important advantages—it enables the superintendent to learn whether or not the pipe has been burst by the freezing, and it makes it possible to backfill with warmer earth. In a great many cases it has been found that pipes, especially service pipes, have been burst by the freezing of the water, and when thawed out these pipes leak, sometimes quite seriously. More-

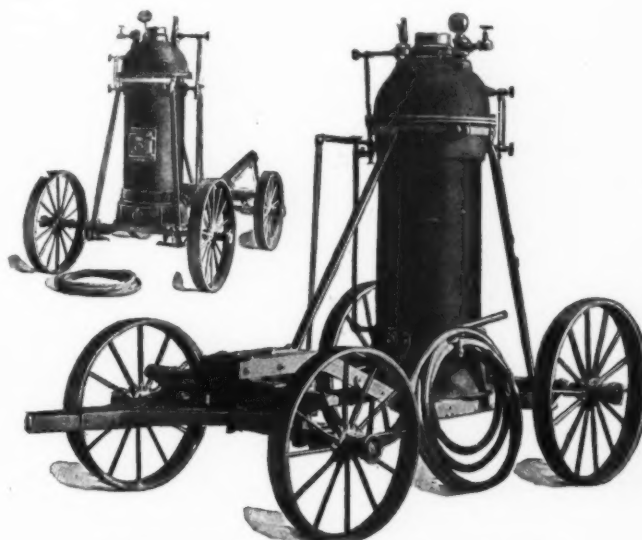
over, it is probable if not certain that a number and possibly a very great number of frozen pipes have been burst without this fact being known, and such pipes may continue in service for years and play an important part in the waste of water.

The flame employed may be that of a wood fire, of oil-soaked waste, or a torch burning gasoline or other inflammable oil, or of gasoline or other oil poured into the trench and set afire. The heat thus applied is more intense than that employed in most of the other methods, but its effect extends for only a short distance from the flame. If a long length of pipe is to be thawed, a fire of wood or waste must either be built for the entire distance at one time or successive fires must be built at intervals along the line.

Heat by flame can be applied to fire hydrants through the nozzle, without digging up. The more common method is to build a fire outside on the ground, thus heating the barrel and the ground around it, which heat will be transmitted by the iron downward till it meets the ice. Or burning waste may be dropped inside the barrel onto the ice. There would seem to be considerable danger, with any application of direct flame, that the local application of considerable heat would result in cracking the cast iron barrel, expanding and buckling the main valve stem, or doing other damage to the hydrant.

HOT WATER AND STEAM.

A safer method of applying heat, and generally a more convenient and reliable one, is the use of hot water or steam. In the case of a fire hydrant, hot water can be poured into the barrel or steam introduced through a steam hose. In the case of a main, it is generally necessary to dig down to the main, and hot water may be conducted into the excavation around the pipe. A more common method, however, is to introduce hot water into the main through a corporation cock or other opening. This may be pumped directly into the main, but with the disadvantage that as soon as a passage is forced through the ice in one direction, the hot water or steam is all apt to pass in that direction rather than where it is needed. The plan most commonly used, it is believed, is to introduce a pipe of block tin, copper or other material into the main through an opening and pump hot water or steam through this pipe, pushing the pipe forward in the main as it thaws a passage for itself. There are several devices on the market manufactured especially for this purpose.



CLOW "TRIUMPH" THAWING STEAMER.

In the case of services, the most convenient way of using hot water or steam is by introducing it into the service from the cellar. The service is disconnected from the house system just inside the cellar wall, at the end of the straight run of pipe from the main to the house, and a small pipe or tube used for introducing hot water or steam is pushed into the service from this end. Probably not more than fifty to seventy-five feet of the block tin pipe or other thawing tube can be used successfully in this way, and if the frozen part of the service extends for a greater distance than this from the house, it cannot be reached by the thawing tube.

In thawing either mains or services an appliance is necessary for heating the water and for pumping it through the small pipe or tube, the arrangement being such that this tube can in the meantime be pushed forward for a considerable distance. A device for thawing in this way was described in Municipal Journal for June 22, 1918, as follows: The apparatus required consists of a coil of about one hundred feet of one-eighth-inch copper tubing, a hand force pump, a pail, and a gasoline furnace. In thawing a frozen house service, the service is disconnected at the stop and waste valve in the cellar and one end of the copper tubing is inserted into the service pipe at this point. The other end of the tube is connected to the outlet of the force pump. The suction line of the force pump is inserted in a pail, which is filled with water and placed over the gasoline heater. When the water is sufficiently hot it is pumped through the tube and melts the ice, the tube being pushed forward as rapidly as the melting of the ice will allow. The water from the tube and that from the melting ice flow back through the service pipe into the cellar.

Whatever the method of thawing employed, the only safe plan is to allow water to run through the service for some time after it is thawed in order to raise above the freezing point the temperature of the pipe and the earth immediately in contact with it. Otherwise, since these probably have not been raised in temperature appreciably during the short time that the thawing operation was in progress, water allowed to stand in the pipe would only be frozen again.

For thawing hydrants the hot water or steam is frequently obtained from a portable boiler carried on a wagon or sleigh, a steam hose connected to it being pushed through the nozzle into the barrel. Several

cities have thawed hydrants by means of the exhaust from a truck or other piece of motor apparatus.

(To be continued)

PHILADELPHIA'S NEW ASH TRUCKS

Details of the Five-and-a-Half-Ton Truck Adopted by the New Bureau of Street Cleaning— Cost of Operating.

In our November 9 issue we published some notes from the first annual report of the newly organized Philadelphia Bureau of Street Cleaning, and among other items described a new type of ash truck adopted by the bureau. We give below further information about this truck, of which ten are in use by the city.

The body of the truck is constructed of metal throughout and weighs about 5,000 pounds. It is mounted on a 5½-ton Mack chassis with an extra long wheelbase of 180 inches, which weighs about 9,900 pounds. The total weight of the truck with a 5½-ton load is, therefore, nearly 13 tons.

For dumping, a special type of hoist has been designed. The chain of the hoist is linked to the bottom of two plungers instead of to the dump hooks. Two cables attached to brackets at the back of the cab run over wheels at the top of the plungers and are attached to hooks at the front end of the body. The use of this double plunger and cable gives a two to one motion instead of a direct pull. When dumping, the tail gate opens upward instead of downward, thus keeping it entirely clear of the load.

As described previously, the top of the truck is provided with six folding covers, so that only a small part of the load need be uncovered during loading. In addition to this, each side of the truck is divided into three panels, which are hinged so that the top of any panel can be lowered, reducing the height to which the ash cans must be lifted during the first half of the collection. This multiplicity of folding parts also makes every part of the truck readily accessible so that if for any reason the load does not dump freely, the obstruction can be gotten at and dislodged.

Records were kept of the performance of the trucks during a number of test days. The dump is at the south end of the city, and it is possible for these trucks to collect

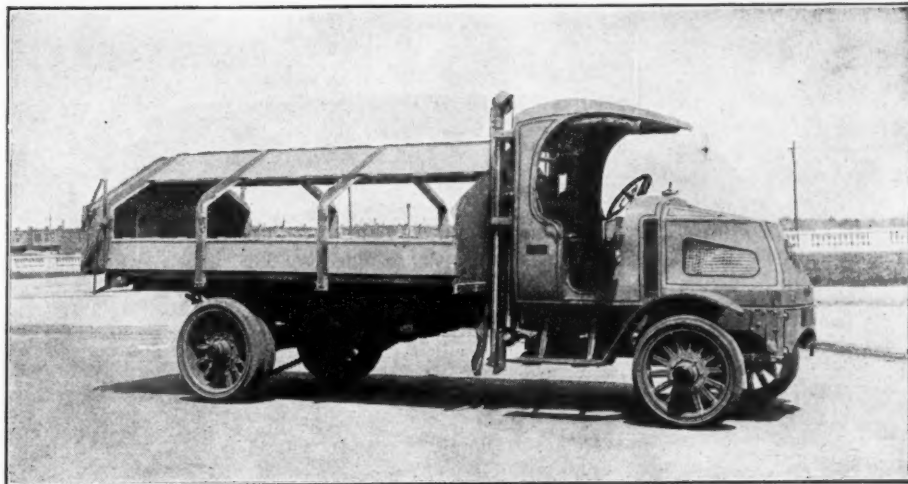
and carry to the dump seven loads a day obtained below Market street, six loads from the heart of the city and five loads from above Market street. Eight consecutive trips show that in collecting the loads the number of receptacles emptied were 320, 332, 325, 304, 324, 329, 320 and 298, respectively.

One of these motors made a total mileage for the day of 60.3, operating for 10 hours and 49 minutes, with an actual traveling time of 6 hours and 23 minutes, the difference in the times being the total of the stops for collection and the time spent in dumping. In making this total, the truck consumed twenty gallons of gasoline and two quarts of oil.

On the basis of the test, the cost of collection is given as \$19.15 a day, or an average of 31.9 cents per cubic yard on the basis of six trips per day with ten cubic yards per trip. The cost is itemized as follows:



THAWING HYDRANT WITH EXHAUST FROM FIRE TRUCK AT MIDDLETOWN, CONN.



TRUCK WITH TOP FOLDED UP AND SIDE PANELS FOLDED DOWN.

Fixed Charge Per Day.	
Driver	\$3.50
Depreciation	2.50
Interest on investment60
Insurance40
Garage75
	<hr/> \$7.75
Operating Cost Per Mile.	
Maintenance	\$0.04
Gasoline08
Tires06
Oil and grease01
	<hr/> \$0.19
Fixed charge per day	\$7.75
Operating cost per mile \$0.19; at 60 miles per day	\$11.40
Total cost per day	<hr/> \$19.15

HANNIBAL'S MUNICIPAL LIGHT AND WATER DEPARTMENTS.

The report for the fiscal year 1917-1918 of the municipal Electric Light and Power Department and the municipal Water Department of the city of Hannibal, Mo., the population of which is about 20,000, is an exceedingly favorable one, especially considering the unusual difficulties under which it, in common with all other public utilities, operated during the year in question.

The management of the electric light and power plant was placed in the hands of the Board of Public Works in 1903, and since that time no part of the general taxes of the city has been used for the support of the plant or the payment of bonds or interest, but all bonds, interest and improvements have been paid from the earnings of the plant. In addition, the plant furnishes, without charge to the city, the street and white-way lighting, the estimated value of which last year was \$5,013, this including maintenance as well as current. The department has paid off all of its bonded indebtedness, so that it now has no liabilities except the deposits on meters, amounting to \$3,570.

During the last fiscal year the department received from all sources a total of \$114,216 and its total expense for all purpose was \$88,970. In this total expense is included the payments of a franchise tax of 2½ per cent of the gross receipts, amounting to \$2,697, betterments to the distribution lines, meters, etc., totaling \$3,373; while donations amounting to \$367 were made to the hospital and library funds.

Of the \$25,246 profit, \$11,000 was invested in liberty bonds and the remainder added to the cash balance, which now amounts to \$125,486.

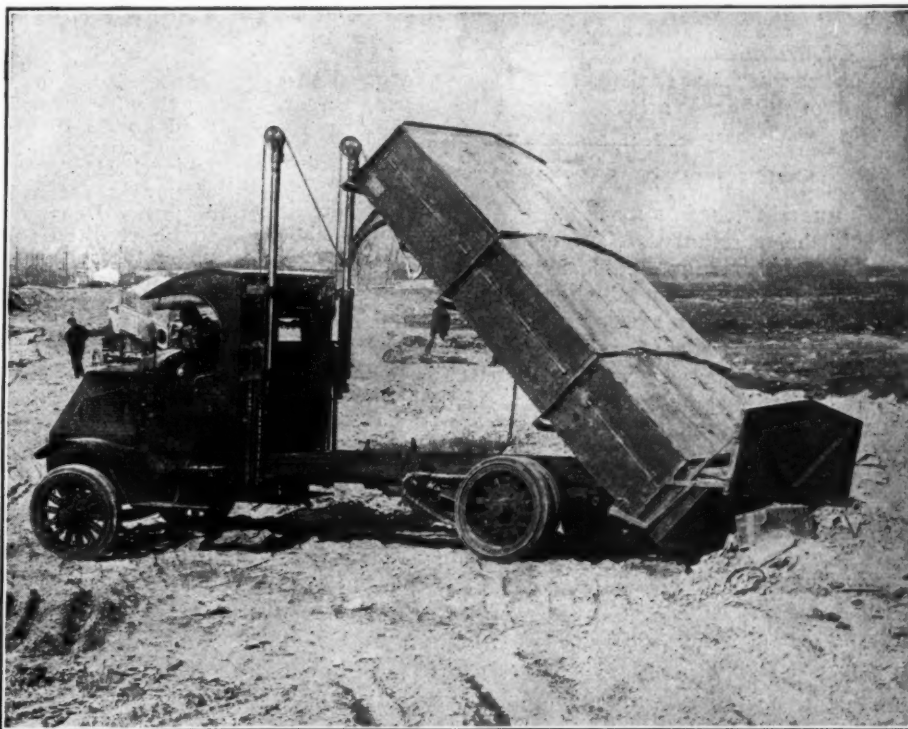
The increase in the cost of coal during the fiscal year over that of

the year previous was \$19,642 or a little over 80 per cent.

The cost of the plant and equipment of the electric and power department has been \$233,756, and a depreciation has been charged off of \$103,366, leaving a present value of \$130,390. With cash, bonds and materials on hand, the total assets are \$269,788, with no liabilities except the \$3,570 previously referred to.

The rates charged for light are 7.2 cents per k. w. h. for bills amounting to \$5 or less per month, 6.4 cents when bills are between \$5 and \$10, both inclusive, and 6 cents if they exceed this; these being all net rates based on payments before the 10th of the month, the base rate being 8 cents. The power rates have a base rate of 5 cents subject to a graduated scale of discounts giving net rates varying from 5 cents to 3 cents. For manufacturers, the base rate is 3 cents and the net rates vary from 2.55 to 1.8 cents net. Of the total income during the past year, \$79,299 was received from light and \$29,407 from power.

The Hannibal waterworks was purchased from the Hannibal Water Company in October, 1913, the city paying \$301,346.65. Bonds were issued by the city for \$360,-



PHILADELPHIA TRUCK DUMPING.

000 for paying the purchase price and making improvements to the waterworks. Of these bonds, \$185,000 have been paid and cancelled, leaving \$175,000 outstanding. Since the purchase of the plant, \$106,218 has been spent for extensions and betterments. The special water fund bond tax collected by the city for water bonds, and interest on the same amounting to \$18,568, has been paid back to the general fund of the city from the water fund, thus relieving the city from the payment of any part of the waterworks bonds or interest. The water department makes no charge for the 169 fire hydrants in the city, thus relieving the city from the payment of \$7,570, which fire protection would have cost it under private ownership. This department also pays a franchise tax of $2\frac{1}{2}$ per cent on the gross receipts, which amounted last year to \$1,477. Other items included in the expenses of the year were \$2,897 for extensions and betterments and part of \$35,000 for waterworks bonds paid and cancelled and of \$10,078 interest on outstanding bonds, the balance of these payments being made from accumulated funds. The coal expense for the year was \$7,510 as compared with \$3,963 the previous year.

In addition to expenses for pumping, there were expenses for purifying the water, among which were \$1,924 for alum, \$478 for sulphate of iron, \$776 for lime, \$12.67 for hypochlorite, \$50.84 for sulphate of copper and \$348 for liquid chlorine. Repairs to reservoir, treating plant and grounds cost \$614. Repairs to the distribution system cost \$3,716.

Of the total income, \$38,007 was from flat-rate water sales and \$20,034 was from metered water sales.

The value of the plant at date is estimated at \$406,288 less a depreciation of \$44,638, or \$361,650. There is in the sinking fund \$2,380.

The meter rates for water service where the consumption does not exceed 15,000 gallons a month is 30 cents per thousand gallons, not exceeding \$3.60; from 15,000 to 45,000 gallons the rate is 24 cents, not exceeding \$9.45; and the rates decrease by 3-cent deductions to one of 11 cents where the amount exceeds 600,000 gallons a month. These rates are subject to a discount of 10 per cent if paid on or before the 15th of the month. There is a net minimum monthly charge of 75 cents for each meter in service.

A. M. Nipper is the superintendent of both plants, and the above figures are taken from his annual report to the Board of Public Works.

CONCRETE SURVEY MONUMENTS.

Monuments used to mark street and other survey lines should be permanent. To secure permanency, either metal, stone or concrete seem to be the only practicable materials, and the metal should be one that will not disintegrate through rust or otherwise. Suitable stone is not available in some localities, and even where it is, is generally more expensive than concrete because of the cost of cutting and transporting.

A concrete monument designed by the Department of Public Highways of Ontario is $4\frac{1}{2}$ feet high (so as to reach below the frost line and thus avoid being heaved by frost action), with a base 8 in. square and top 5 in. square, with a 1 in. chamfer at each corner. In each corner is placed a steel $\frac{3}{8}$ in. round reinforcing bar with the ends hooked. To prevent splitting of the concrete, the bars are wound at four places with No. 10 annealed steel wire. A piece of No. 10 copper wire 6 in. long and hooked at the bottom is set in the top of the monument, at the center, for a center point. It is allowed to project slightly, but when the concrete has set the wire is cut flush with the top surface and the top of the monument

is rubbed down with carborundum stone. The weight of these averaged 200 pounds.

HIGHWAY CONSTRUCTION AND THE LABOR PROBLEM.

The following letter by the state highway commissioner of Colorado explains a plan that will be of interest to most if not all state highway authorities:

Denver, Colorado, Nov. 15, 1918.

Mr. Ira L. Browning,
State Highway Commissioner,
Salt Lake City, Utah.

My dear Sir: It is apparent that the Better Roads question has arrived at the point where National consideration is demanded. New conditions have arisen, which, in my opinion makes it the most important public matter to be considered. I am submitting herewith a few of my ideas on this subject.

Out in the West we have a great big country gradually evolving from barren waste to productiveness. There are millions of acres in the plains and prairie sections of these western states over which are scattered thousands of successful farmers, demonstrating beyond any question that ninety per cent of these lands can be made into prosperous farm homes. And there are other millions of acres in the mountain valleys which can be re-claimed by irrigation, offering thousands of homes for the homeless. Opportunity is here, awaiting better roads and publicity. These states are large in area and necessitate extensive systems of roads, including miles of expensive construction. We are handicapped by low valuations, which necessitate high taxes for road purposes, many communities taxing themselves as high as seven mills on each dollar valuation. All of these western states are preparing to increase their road fund by increased taxes and bond issues.

This whole nation is confronted by an emergency that should be temporarily provided for at once. An urgent demand for additional transportation facilities to move crops and goods has brought the motor truck with the power and ability to meet the situation, if roads capable of sustaining the traffic are provided. We will be confronted in the immediate future with the necessity of providing labor with employment at good wages. The men who are now employed in Government service cannot be turned loose without consideration. Our boys "over there" who will be home presently must have every opportunity provided for employment of every character—business chances and land settlement. Good roads today is the most vital thing in all our business relations. Why not ask the Government to furnish promptly, assistance, temporarily in character, to care for the conditions confronting us, later working out a comprehensive National program of Highway Construction in conjunction with the states. Why not ask the present session of Congress to provide for an issue of one hundred million $4\frac{1}{2}$ per cent road bonds, 50 per cent in 1919 and 50 per cent in 1920 apportioned to the states on the basis used under the Federal Aid Act. Each State's apportionment to be sold at par in the state receiving the allotment through its Highway Department, and paid into the State Treasury to be credited to the State's Road Fund and expended under the supervision of the Highway Department in construction and improvement on the principal state highways in localities where such construction and improvement may be done to the best advantage.

Without a doubt every phase of the subject of transportation and roads will be discussed at the meeting of the American Association of State Highway Officials at Chicago in December, and I would like very much to see a resolution introduced urging Congressional action along the lines I have suggested, leaving out the "red tape" and permitting the State Highway Departments of the states to use the funds derived under the suggested plan, to be expended promptly without the usual delays connected with Governmental expenditures, because, in my opinion, it is vitally necessary that employment be furnished labor.

Immediate action is imperative if we are to save our roads and meet the conditions confronting us. Congress is already grappling with the problem in a general way. Why not help your delegation in their work by presenting this plan to them with such modifications as may appear wise to you?

Very respectfully yours,
T. J. Ehrhart,
State Highway Commissioner.

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City officials and civic organizations are particularly requested to send to Municipal Journal regularly their annual and special reports.

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Municipal Journal's Information Bureau, developed by twenty-one years' research and practical experience in its special field, is at the command of our subscribers at all times and without charge.

URBAN DISTRICT SANITATION.

The work done during the past year by the U. S. Public Health Service in improving conditions as to sanitation in the vicinity of the numerous cantonments throughout the country should furnish an object lesson to all section of the United States in what can be done, what should be done, and how to do it, in bringing about conditions throughout the country under which not only will death rates be lower but also the general health of the citizens will be better and their effectiveness as workers be correspondingly increased. Supplemented by the ideas of sanitary methods of living that have been forced home upon all of the soldiers who have spent any time in the cantonments here or in the army abroad and who, returning, will scatter to almost every community in the country, there would seem to be good reason for hoping that people everywhere throughout the country, in small communities as well as in large, will insist that conditions as to sanitation be much better in the future than they have been in the past.

After all, the obtaining of such conditions is largely a matter of desiring them, since it is neither difficult nor expensive. As to the expense, the article in this issue describing the work done in the vicinity of Fort Worth shows that the cost of putting into fairly good condition a section of country including about thirty-eight square miles and a population of nearly 100,000 did not exceed \$60,000, including the value of material and services donated to the work; this including all of the work, much of it done under emergency conditions, extending over a period of six months. Some of this work is temporary only, while other is permanent to the extent that much smaller annual expenditures will permit maintaining it continuously. But even were the entire expense required each year, this would amount to only about sixty cents per capita—an absurdly small amount to pay for any appreciable increase in the health of the community. A single case of sickness in one out of each hundred of the population, that might have been prevented by this kind of work, might cost more than this. If the work were done under ordinary conditions, with labor receiving less than the \$2.50 a day that was paid (almost double the normal) and all materials purchased at pre-war prices,

the annual cost probably would not exceed thirty or thirty-five cents per capita. In addition, it is to be noted that a considerable part of the money was spent for the drainage of camps, the population of which was not included in that given, and allowance for this would still further reduce the probable per capita cost for work of this kind carried on as an established service.

At this point we are confronted with the problem as to under what control such work shall be carried on. A considerable part of it extended, in the case referred to, for a mile outside of the corporate limits of the city, but such extra-urban work could not be undertaken by city authorities unless their powers were extended by the state. State boards of health would appear to be the only existing organization having the power to carry out such work, but even these probably would find it necessary to secure active and cordial cooperation with the cities so that their respective powers and rights would not clash. For these and other reasons there would seem to be excellent argument for the creation by the states of a sanitary district or zone around each city, within which districts the city authorities would have the powers necessary for securing the elimination of any conditions that would injuriously affect the health of those living within the corporate limits. Some such powers have already been conferred by a number of states for specified purpose, such as the power to prevent insanitary conditions on the water sheds from which the public supply is derived. In other states, cities are given certain powers in the way of controlling the lay-out of streets in territory outside the corporate limits so that these may harmonize with the general city lay-out should the city expand into the territory so regulated. There would therefore seem to be no legal obstacle to the creation of such zones by the state.

This including of outside territory in the sanitary districts placed under Federal control was decided upon largely in order to secure the elimination of malarial mosquitoes, which are believed to limit their migrations to about the distance of one mile; but there are numerous other arguments in favor of this, such as ability to control, hotels, eating places and other places which, although frequented by citizens, might be just outside the city boundaries and beyond the control of the health officials.

The country will undoubtedly have learned much from the emergency work carried on during the war, some of this information being in the nature of what to avoid, but there is much which should also inspire imitation or at least advance along similar lines. And in probably no branch of this emergency war work has there been more that should be adopted as a permanent policy than in the work of the Public Health Service.

GOVERNMENT FINANCING OF GOOD ROADS.

During the past eighteen months the Federal government—the people of the entire country acting as a unit—has spent probably as much of the people's money as in all the previous years of its existence; it has operated all lines of traffic and communication, and dictated what should and should not be manufactured, what we should eat and drink and wherewithal we should be clothed, and almost what we should say and even think. With the end of the war, how much of this Federal control shall be retained? Suggestions as to this are legion, and among the most reasonable are some concerning the constructing and improving of roads.

One of the difficulties of the road problem arises from the fact that roads are most needed for the development of those sections of the country where there is the least population and wealth to pay for them. The civil war

brought to a head the agitation for a trans-continental railroad, and the Federal government financed a railroad the purpose of which was to open up the western part of the United States. There are many who believe that this war has demonstrated the desirability of some plan whereby the government should finance highways throughout the country.

For the reason indicated—that the need of this is greatest where the development of the country has progressed least—it is natural that advocates of such government aid should be most numerous in the less populated states. Last week's issue referred to such proposals from Oklahoma and Washington, and quoted the fourth assistant postmaster general as suggesting a definite plan for financing nation-wide highway improvement; while advocacy of Federal aid is made in a letter from the highway commissioner of Colorado to the commissioner of Utah, printed in this issue.

Nation-wide improvement of highways is comparable with government control of all the railroads in its vastness. One senator proposes the use of a million men or more for the work, involving probably an expenditure of a billion dollars a year in wages alone. It seems quite possible, however, that some such action will be taken.

GARBAGE DISPOSAL METHODS.

The following letter is self-explanatory, and presumably brings up to date information concerning certain cities included in Mr. Harden's table. In justice to Mr. Harden, it should be said that he was collecting information about incinerators and not about garbage disposal. In the case of Greensboro, his table contained the same information as that given by Mr. Bamman. In the case of Pasadena, although it is stated in the letter below that "Pasadena has never destroyed garbage," this paper was informed by an official of that city two years ago that the city was then burning its garbage in an incinerator. In several of the cities cited below it will be noted that the garbage is delivered to pig raisers at the incinerator, indicating probably that part of the garbage is not taken away but is burned.

In brief, while we do not doubt that Mr. Bamman's information is correct, it does not, to our mind, indicate that that in Mr. Harden's table is not equally so.

Editor Municipal Journal,
243 West 39th Street, New York City.

Dear Sir:

The Municipal Journal of October 26, 1918, contained a very interesting article entitled "Garbage and Refuse Disposal Data," and consisting of several tables of data compiled by H. J. Harden, city engineer of Paterson.

Our efforts to compile like material gives us a keen appreciation of the work Mr. Harden has done. We note, however, that this data is presumably of recent origin, and believe that it is misleading in this particular. No less than eight of the cities reported as incinerating their garbage assure us that feeding is their present method of disposal.

We call your attention to this fact as we feel sure you are in sympathy with the Food Administration's endeavors to increase garbage utilization and appreciate the effect of the tables mentioned on cities now disposing of their garbage by incineration or some other non-utilization method and contemplating a change to feeding or reduction.

The cities referred to as having changed their methods, in the order of your table, advise us as follows:

Portland, Ore.—Dan Kellaher, commissioner of finance, writes on July 31 and again on October 17 that Portland is selling its garbage (kitchen and table refuse) under contract at \$3.90 per ton f. o. b. incinerator.

South Bend, Ind.—D. C. Layton, street commissioner, advises that for 1918 they have a contract with a private party to buy all the garbage the city collects at \$1 per ton, delivery to be made to the crematory site and the contractor to haul to private piggery outside of city.

Easton, Pa.—C. A. Reese, city engineer, advises that a

municipal farm has been purchased for the raising of pigs. At the time of his letter, June 17, they had nearly 100 on hand, and expected to increase the herd as circumstances permitted.

Covington, Ky.—Thomas F. Connolley, commissioner of public works, on March 22 advised that a contract had been closed for feeding the garbage from the south side district, and that the Covington district proper would likewise be under contract that week, disposal by feeding.

Cairo, Ill.—Mr. Charles Feuchter, commissioner of public health and safety, writes under date of April 2 that a large part of the garbage was being taken to the incinerator, placed in barrels and hauled by a contractor to a hog farm six or seven miles north of the city.

Greensboro, N. C.—E. J. Stafford, mayor, advises that only waste paper, etc., is burned at the incinerator, private parties collecting the garbage for feed.

Wilmington, N. C.—P. L. Moon, mayor, advises us that all of the garbage is collected separately and bought by farmers for hog feed.

Pasadena, Cal.—A. L. Hamilton, chairman city commission, advises us under date of April 14 that Pasadena has never destroyed garbage, but has always utilized it for feeding purposes. For a time the city even fed garbage on its own farm.

You will note that the combined population of the above cities totals roughly 600,000. What this means in increased pork production is readily imagined when it is remembered that a ton of garbage contains on an average sufficient feeding value to produce 100 pounds of pork live weight. According to Mr. Harden's tables, these changes do not only mean the production of a considerable amount of valuable pork, but that both the food and fuel situations are benefited, these cities also saving considerable fuel and making such fuel available for other purposes.

I trust that you will find opportunity to utilize the above information in the Municipal Journal, as we feel it more clearly represents the trend of garbage disposal than does Mr. Harden's tables. A number of other cities he mentions are considering a change to utilization at the present time.

In closing we might say that we have received word from each of the above cities since October 1 that feeding of garbage and not incineration was the method of disposal.

Very truly yours,

U. S. FOOD ADMINISTRATION.

Division of Collateral Commodities.

Per F. C. BAMMAN,

Garbage Utilization Section.

MUNICIPAL SERVICE FINANCES.

In his latest annual report of "Financial Transactions of Municipalities and Counties of California," John S. Chambers, state controller, makes the following comments on municipal service enterprises:

"In a great many instances our municipal service enterprises do not provide for their bond interest and redemption from the revenue of the plant, but from a direct tax levy upon property. However, in the majority of cases such plants show a good earning power and all expenses should be met from the revenues derived from operation, with the possible exception of a large extension to serve an outlying population or lately annexed territory.

"In most instances, in municipally owned water and light plants, the rates are less or the service better than those of a private corporation, but a private corporation not only expects all expenses, including bond interest and redemptions and depreciation, to be met from the proceeds of operation of the plant, but also a substantial dividend.

"A municipal plant should not be expected to accumulate a large surplus any more than a city should collect excessive taxes for the purpose of establishing an unduly large reserve fund, nor should the plant be expected to raise revenue to be transferred, at the pleasure of the governing body, from that fund to some other for the benefit of some function foreign to it.

"The rates should be made so that those receiving the benefit of superior service or lower rates should pay the annual cost of the source of such benefit."

The WEEK'S NEWS

To Improve Pittsburgh's Bridges—Extent of Venereal Disease Among Drafted Men—Water Waste in Toledo—Garfield Disapproves Lower Gas Standards—Investigating the Big Morgan, N. J., Explosions—Agree on Buffalo Street Railway Plans—City Plan for Springfield, Ill., Prepared by Architects, Artists and Sculptors—Port Development in Tacoma—Housing Conditions in Harrisburg.

ROADS AND PAVEMENTS

To Begin Extensive Bridge Improvements.

Pittsburgh, Pa.—Lifting of construction restrictions by the War Industries Board has started the Allegheny county commissioners planning for a vast amount of public improvements the coming year. The commissioners have conferred with the county engineer and it has been decided to begin preparations at once for the building of the bridge over the Ohio River from California avenue, Northside, to the Indian mound, McKees Rocks; the Sixteenth street bridge over the Allegheny river; the Wilson bridge over the Monongahela river, between Wilson and Glassport; the rebuilding or repairing of nearly all of the 240 lightly constructed bridges in the county, and the repairing and building of many roads. "There will be very little real construction work done on these improvements before next spring," said commissioner Frank J. Harris, "but we are getting ready for an immense amount of work in the county next year. The building of the McKees Rocks bridge, the Sixteenth street bridge and probably the Forty-third street bridge will be the most important of the bridge improvements. We are still hopeful that the government will allow us to erect the McKees Rocks bridge with a 900-foot span, instead of an 1,100-foot span. If the 900-foot span is allowed, the cost of the structure will be reduced considerably. The prices of steel, other materials and labor as at present, have increased the original cost of the proposed bridges in the county; but we hope by next spring, when we can begin construction work on them, that the costs of labor and materials will be more reasonable than they are now."

To Complete County Road System.

Sacramento, Cal.—With between twenty and twenty-five miles of county highway to be completed engineer R. M. Morton, of the county highway commission, says all of the 124-mile system of roads of the \$1,750,000 will be completed during the early summer months of 1919. Although the war held up the road building to a large extent, it was never entirely stopped, and now, with the Government lifting the restrictions the work will be resumed on a larger scale. The river roads are the only highways with a great deal of work to be done on them. They can not be completed until the levees are raised by the reclamation districts. Other than the river roads, most of the other paved boulevards are now complete. In some cases there are small stretches of between one and three miles to be finished.

Illuminated Markers on Lincoln Highway.

Cedar Rapids, Ia.—Cedar Rapids claims the distinction of being the first city west of Pittsburgh to provide illuminated red, white and blue Lincoln highway markers, in facilitating travel at night for the stranger through the business sections of the city. An order has just been placed by W. P. Powell, local consul of the Lincoln Highway association, for a sufficient number of 16-inch standard Lincoln highway globes for the electroliers in the business section of Cedar Rapids traversed by the route. These markers will be placed four to the block. Twelve-inch globes of a similar design will be used for the arc lights in the residential sections of the city and at all turning points. In addition to the lights provided by the city, the

Standard Oil company and the Indian Petroleum company will provide 16-inch illuminated Lincoln highway markers at their filling stations upon the Lincoln highway in Cedar Rapids. In addition to these markers, arrows, five feet long and six inches wide, will be placed at the five turns in the route of the Lincoln highway in Cedar Rapids, and further, it is intended to bracket 8-inch by 24-inch metal markers to the electroliers in the business section, four to the block, and high enough to be seen over the tops of parked automobiles. The globes for the illuminated markers are to be manufactured by the Macbeth-Evans Glass company, of Pittsburgh, under a working agreement with the Lincoln Highway association.

War Department to Improve Roads in Naval District.

Hampton Roads, Va.—The war department at Washington has announced that for the development of roads at the Hampton Road district, the sum of \$1,710,000 has been authorized. The work is to be done by the construction division of the army, and will consist of improvements on roads from the Road Naval Base No. 2 to Camp Morrison; from the navy yard to Portsmouth; Norfolk to naval base at Lewells Point, to Ocean View; and improvements on roads from Fort Monroe to Langley Field, to Hampton and to Newport News.

SEWERAGE AND SANITATION

Prevalence of Venereal Disease Among Drafted Men.

Washington, D. C.—Figures showing the percentage of venereal diseases among men entering army training camps have been made public by Surgeon-General Rupert Blue, of the United States Public Health Service. These figures deal with a million men, a quota from every state in the Union. They apply only to the million men whose reports first reached the Adjutant-General's office from the various camp surgeons. Later reports may possibly change the percentages. The figures show that the state sending the least proportion of men afflicted with vice diseases was Oregon, with 0.59 per cent. The largest percentage of infected men was furnished by Florida, with 8.9 per cent. The percentages, that is number of men having disease in every hundred examined, according to states follows:

Oregon	0.59	Dist. of Columbia.....	2.14
Idaho	0.76	Kansas	2.38
Utah	0.79	Illinois	2.44
Washington	0.86	Pennsylvania	2.60
Montana	0.89	Rhode Island	2.66
South Dakota	0.92	New Mexico.....	2.68
California	1.15	Delaware	2.78
Wisconsin	1.21	Ohio	3.24
Wyoming	1.22	Maryland	3.28
New Hampshire.....	1.22	Indiana	3.30
Nevada	1.40	Louisiana	3.32
Nebraska	1.53	Arizona	3.40
Vermont	1.53	Missouri	3.50
New Jersey	1.55	Kentucky	3.70
Minnesota	1.57	Tennessee	3.80
Connecticut	1.60	North Carolina	3.90
Iowa	1.63	West Virginia.....	4.00
Massachusetts	1.66	Mississippi	4.05
Arkansas	1.73	Oklahoma	4.50
North Dakota	1.75	Texas	4.70
New York	1.82	Georgia	5.60
Alaska	1.90	South Carolina.....	8.00
Michigan	1.95	Virginia	8.40
Maine	2.02	Alabama	8.70
Colorado	2.12	Florida	8.90

"The task of combating the spread of venereal disease among the civil communities of the United States is a task

that has taken on a tremendously added importance with the coming of peace," declares Surgeon-General Blue. "Fortunately, Congress enabled us to organize our Division of Venereal Diseases a sufficient time ahead of the coming of peace to enable us to make appreciable headway in the task of securing clean communities to which our returning soldiers may come. And, while the job of fighting vice diseases is first, last and all the time a civilian job, it must not be forgotten that it was the vast amount of venereal disease that was creeping into our military service from civil life that first awakened us to the need of the work. The estimates of some of the military authorities were to the effect that no less than five-sixths of all the vice disease in the army was brought there from civil life."

Fighting Influenza in Alaska.

Juneau, Alaska.—Bearing ten physicians, nurses, and a complete equipment of medical supplies, the steamer Spokane has left Seattle, Wash., on a fast trip to Juneau. It carries aid to Alaska natives suffering from Spanish influenza. Dr. Emil Kruehish, of the United States Public Service, is in charge of the party.

Wants Prisoners Employed on Mosquito Extermination.

Trenton, N. J.—The state board of charities and corrections has recommended to the state budget commission an appropriation of \$100,000 for the state department of conservation and development to provide for the employment of inmates of correctional institutions in the extermination of salt marsh mosquitoes in New Jersey. The object is to promote the availability of New Jersey for agricultural development during reconstruction.

WATER SUPPLY

Council to Investigate Water Waste.

Toledo, Ohio.—An ordinance authorizing the employment of engineers to conduct a water waste survey has been approved by the council committee on public improvements. The expense will not exceed \$2,700. The survey will include the east side, north of Dearborn avenue; the submerged water mains in the river, and that territory bounded by the Ann Arbor railway on the west, by the river on the east, by Cherry street on the south and by the city limits on the north. The measuring and checking of the flow of water into the mains are planned, and the locating of the water wastes under the ground and through the services. A house-to-house inspection of all services is contemplated to check office records, and the large consumers of water will be investigated.

New Water Supply System Proposed.

Waukegan, Ill.—C. Arthur Brown, American Steel and Wire Co. water supply expert, recently submitted to the city commission a thorough report detailing his solution of Waukegan's water supply problem. The report recommends in brief:

1. Transfer of the city's entire water supply plant to a site not less than a mile north of the city limits.
2. New and modern pumping high pressure station, with two new high duty mains and other new distributing mains.
3. New intake, with crib and suction well.
4. Mechanical filtration plant with capacity of 8,000,000 gallons daily, with low service pumping station to pump water from suction well to forebay of purification works.
5. Abandonment of old pumping station when new is in commission.
6. Meterization of entire city, and equalization of rates. Mr. Brown says the large consumer now has the better of the deal.
7. Intersecting sewer to divert water to some point south of harbor.
8. Project to be financed to limit of bonds allowable and deficit be made up by public or private subscriptions to be paid in warrants issued against the new works, due in semi-annual installments out of income.
9. Board of water commissioners divorced from politics to oversee construction of new plant and administer its affairs after completion. These to be elected.

Mr. Brown in his report disapproved the deep well and Morrow Pond waterworks supply projects as too uncertain and visionary and decided that the only solution is a filtration plant a mile north of the city limits after a review of the entire water situation in Waukegan for many years back, together with analysis of many water

tests. Water samples were taken at nine different points by his assistant, chemist L. R. Kelmekay. Samples taken from above the intake and at the intake mouth were found to be badly polluted. Water from the lake opposite the tannery, at the wire mill intake, at the north city limits, and elsewhere, also were found unfit. The sample taken directly from the lake which showed up the best was that from a mile north of the city limits. The best sample of all was that from the Morrow Pond, explained by the greater opportunity there for the water to settle. Mr. Brown pointed out that this dangerous pollution is due to the fact the lake currents send the sewage over the intake and in its general direction. From this he concludes that the new intake should be far to the north and that a new intercepting sewer divert the pollution far to the south, out of the trend of the lake currents.

City Raises Water Rates 20 Per Cent.

Canton, Ohio.—Council has voted to increase the water rates twenty per cent, and has received a report of the water committee recommending an issue of bonds in the amount of \$1,174,900 to carry out some of the recommendations recently made by the city water commission. The new water rate will become effective January 1. The bond issue proposition, which was referred to the finance committee for consideration, calls for more than twice as much as any other expenditure ever proposed by the municipality, but it is less than the amount estimated as needed by the water commission. Of the \$1,174,900, the sum of \$252,000 is to be used for metering all the services in the city, while \$500,000 is for the distributing system. The sum of \$237,900 is asked for the northeast end station, wells and basin, and \$145,000 for construction and equipment of a generating plant. The improvement at the Elgin avenue station will require \$40,000. The water rate resolution calls for the elimination of the present reduction of 10 per cent allowed by the water department, and recommends an increase of 10 per cent over the present rates, making a net increase of 20 per cent over and above the present rates, as was recommended by the water commission. Service director DeCorps says that the change in the water rates would mean the changing of practically the entire set of books in the water works office at considerable expense and trouble, as the books had been posted under the old rate.

STREET LIGHTING AND POWER

Lower Gas Standards Disapproved by Garfield.

Washington, D. C.—Fuel Administrator Garfield has announced his decision against the universal reduction throughout the country in the fuel value of gas to 528 British thermal units. This ends the agitation of the gas companies, aided by the director of gas plants, to take advantage of the war to increase their rates. The official statement leaves the whole question to the determination of the local public utility commissioners, and urges them to make certain that a reduction in standards will actually result in a saving of oil. Where the reduction is ordered, he declares it should be accompanied by a corresponding decrease in the price to the consumer. "In July last," says the statement of the fuel administration, "the United States fuel administrator appointed a special committee in conjunction with the Bureau of Standards to investigate the heat value of artificial gas, with a view to recommending what change, if any, in the B.t.u. standards would save coal or oil. Since the creation of this committee the fuel situation has materially changed. The production of bituminous coal has increased under the stimulus of the administration to unheard of figures and the situation is not as critical as last summer. Yet it is probable that under zoning orders of the fuel administration some gas plants throughout the country will not be able to receive their customary rate of coal and this may necessitate a temporary reduction in the gas standard. At the cessation of hostilities, the demand for oil and coal will be transferred to other channels and the pressing demand for immediate deliveries will be reduced to such an extent that

the fuel administrator does not feel warranted in asking local boards to abandon existing standards. While it is not within the province of the fuel administrator to request thrift in general, Dr. Garfield desires to call attention to the fact that we are using our oil deposits perilously fast and therefore public service commissions should consider whether or not a reduction in B.t.u. standards by the companies under their jurisdiction will actually save oil. In the interest of the public, however, wherever a reduction in quality is ordered or approved, there should be simultaneously made a corresponding reduction in the price of gas."

Coal Zone Plan Saved Transportation.

Washington, D. C.—The Fuel Administration has announced that its estimate that approximately 360,000,000 car miles would be saved this coal year through the operation of the zone system for the distribution of bituminous coal is being realized. "This system," said the announcement, "made possible through the cooperation of the Railroad Administration with the Fuel Administration, has had a large share in bringing the nation's supply of bituminous coal to its present proportions, which, with patriotic economy, will be sufficient for the winter's requirements."

Gas Rate Increased Over City's Protest.

Denver, Colo.—The public utilities commission has announced that the Denver Gas and Electric Light Company has been granted an increase of 10 cents net per thousand cubic feet on both domestic and industrial gas rates, effective as of Nov. 14. The company filed an application for an increase in rates about two months ago, submitting with the application an inventory of the company's business. The commission began a hearing of the case, in which the gas company placed a number of their officials on the stand to substantiate the inventory. The city attorney's office, prior to the hearing, filed a protest, basing its claim on the contention that the commission did not have jurisdiction over the case, and was not empowered to grant an increase. The city will probably file a protest to the commission's action and request the Supreme court to render a decision. This is the same action that was taken in the case of a recent increase in rates granted the Denver Telephone Company. The increase granted to the gas company raises the present rate of 85 cents for domestic gas to 95 cents, and the industrial rate from 60 to 70 cents per thousand cubic feet. The increase consists of a war surcharge of 5 cents per thousand and a decrease in the discount allowance of 5 cents.

Labor Brings Suit Against Higher City Gas Rate.

Richmond, Va.—Through Jesse C. Duke, legal adviser of the Central Trades and Labor Council, the legislative committee of the central trades body has instituted proceedings designed to test the legal right of the city gas department to impose the \$1 rate for gas on consumers prior to November 1. Gas bills presented this month carry the increased rate. To make the test, attorney Duke, acting individually, went to the city treasurer's office and tendered payment of a gas bill for 1,200 cubic feet at the old rate of eighty cents a thousand cubic feet. Deputy treasurer R. Lynn Tucker, to whom Mr. Duke tendered ninety-six cents and the bill, which was for \$1.20, promptly declined to accept the amount offered and give the receipt demanded by the lawyer. Mr. Tucker explained that he had no authority to accept any amount less than that show to be due on the face of the bill. Superintendent W. P. Knowles, of the gas department, informed him that the meter was read October 28, and the bill was for gas consumed in the preceding month. Mr. Duke contended that the ordinance by which the increase in the price from 80 cents to \$1 a thousand feet does not recognize the new rate as in effect until November 1, and that the meter should not have been read for the new rate until that date. Explaining the test he had been instructed by the legislative committee of the Central Trades and Labor Council to make, Mr. Duke said: "In the first place, this ordinance was passed

without giving the people of Richmond a full and fair hearing. It was rushed through without giving the union labor interests the hearing they had asked and to which they were entitled. Secondly, we are endeavoring to save the gas consumers of Richmond about \$12,000. We find that bills carrying the new rate have been rendered for gas consumed to the extent of from 660,000 to 800,000 cubic feet. We will, therefore, resist collection of the bills that we consider excessive. We base our contention on section 2 of the new ordinance, which says: 'This ordinance shall be in force from and after November 1, 1918, and shall apply to all bills dated from and after said date'."

FIRE AND POLICE

Policemen and Firemen Get Raise.

Birmingham, Ala.—Firemen and policemen are to receive an increase in salary, effective beginning with the fiscal year, according to an announcement made recently by Dr. N. A. Barrett, president of the city commission. All of the firemen will be raised \$10 per month, and all members of the police department will receive an increase of \$20, which includes the \$5 increase granted last February, which was to have become effective as of Oct. 1. The policemen recently made a demand for an increase of \$25 per month in salary, while the firemen also made application to the city commission for increases in their pay.

Experts Say Morgan Catastrophe Was Avoidable.

Morgan, N. J.—A War Industries Board suggestion that might have prevented the recent destruction by fire and explosions of the T. A. Gillespie Loading Company's munition plant at Morgan, N. J., was ignored by the company, according to E. C. Hawley, inspector of the Fire Prevention Bureau of the War Industries Board, who testified before the United States senatorial investigating committee at Perth Amboy. The committee consists of Senators Joseph S. Frelinghuysen, of New Jersey; Henry Myers, of Montana, and J. W. C. Beckman, of Kentucky. Hawley said that the Fire Prevention Bureau, through him, advised the company on June 25 to put in a sprinkler system. He said: "If it had been done, there is a strong probability that the fire would have been confined to the building in which it originated, provided the employees of the plant familiar with the system kept their heads and cut out any part of the system wrecked by the first blast." Two government inspectors, E. H. Bowe and F. H. Powell, testifying at another hearing before the committee, told of many violations of rules and regulations that had come to their notice during the several weeks they were on duty at the plant. Bowe said that one day when he was detailed to examine the gauges of steam pressure connected with the kettles in which his explosives were mixed, he found nine out of ten gauges out of commission, while the tenth was uncertain, because the kettle was not being used. Bowe and Powell both said that many times when but five pounds pressure of steam was required, it was very much greater. Powell said he had heard the plant was swept and cleaned of refuse, but that he had never seen it done, and the floors were always dirty. The committee learned from E. A. Yates, vice-president of the company, and other witnesses that 12,155,839 pounds of explosives were set off out of a store of 30,855,779 pounds in the plant or near it, which included, in pounds: Citrate of ammonia, 9,000,000; TNT, 7,800,000; smokeless powder, 1,871,360; nitrate starch, 107,400; TNT in storage, 3,037,481, and amatol, 3,450,000. Mr. Yates said there were 718,498 shells of various sizes in the plant, 456,960 in cars and 38,000 on lighters. Most of the shells in the cars, he stated, already had inserted the "boosters," which, with fuses, provide the detonation to explode TNT. Mr. Yates said he and officials succeeded in getting out about fifteen or twenty loaded cars while the fire was raging. In reply to questions as to why 456,000 pounds of explosives were left in freight cars near the plant, Mr. Yates said that a shortage of ships in the army transport service

had caused the stores to pile up. "We had no control over the raw material," he said. "Magazines designed to hold 150,000 pounds of TNT or nitrate ammonia actually held 265,000, and others designed to hold 250,000 pounds held 450,000." Mr. Yates admitted that the vast stores of explosives constituted a menace to the community and to all the cities in the vicinity, but asserted that the officials of the plant had no remedy. Mr. Yates gave an estimate of the property damage resulting from the explosion at the plant, and fixed the figure at \$21,000,000, which, he said, the government will have to pay. Senator Frelinghuysen asked what inducement the contract carried to make the company exercise due care to guard against damage during construction. "The contract provided that we should be at all times under the supervision of United States Government inspectors," said Mr. Yates. "We had the welfare of every man in mind and provided in every way for his protection." He said that the government had reserved the right to revoke the contract for wilful misconduct or other causes and that failure to exercise care in protecting and selecting employes would have been regarded as wilful misconduct on the part of the company.

Superintendent Leonard of unit 6-1-1, where the fire started, testified he believed it was due to the work of an enemy alien who must have sacrificed his life in the attempt, as the only way a melting kettle could have been detonated would have been to toss into one of them some form of high explosive. John J. Donoghue, chief of the plant's fire department, told of the happenings following the explosion and of how he finally became unconscious and woke up in the Lakewood Hospital. In reply to questionings about the efficiency of the fire department, chief Donoghue said the pumping station engineer called up the fire house hourly and gave reports on the condition of the pumps. He also said daily drills were held and patrols and inspections were made twice daily by his men. He testified as to his experience by saying that he served twenty years in the New York fire department and retired voluntarily as a captain. Senator Frelinghuysen questioned Mr. Yates, trying to show that the Gillespie company, acting as agent for the War Department, had disregarded New Jersey laws on handling explosives in constructing the plant. Mr. Yates admitted that the ammonium nitrate magazines did not comply with the New Jersey regulations regarding distance from other magazines, but defended this on the ground that the government did not consider ammonium nitrate an explosive. The testimony showed that the Attorney General of the United States had given a formal ruling that the War Department need not comply with state laws in plants of this kind during war time, if emergency needs and speed made this non-compliance desirable. State officials even went so far as to try to inspect the plant in order to secure compliance, but were not permitted to do so. As a result of the investigation under orders from the War Department tons of high explosives, such as TNT and poisonous gases, are either being moved from various points in New Jersey, or the process of moving them will soon begin. Most of the explosives and poisonous gases will be stored in New Mexico. The removal of explosives and gases from New Jersey was furthered through the efforts of Senator Frelinghuysen.

TRAFFIC AND TRANSPORTATION

"Massachusetts Plan" of Public Control for Buffalo Cars.

Buffalo, N. Y.—An arrangement has finally been agreed to between the International Railway and the city whereby all pending litigation will be dropped and the "Massachusetts plan" of electric railway operation and control will be put into effect. Edward G. Connette, president of the company, offers to co-operate with the city council in determining a fair valuation of the company's properties within the city of Buffalo. President Connette said: "Upon receiving assurances of a fixed return and of proper provisions for maintenance and upkeep of the property, we will agree to any form of management the mayor wants.

Nothing can be more liberal than that. Furthermore, we will then agree to place the city properties in such position that ultimately the city can buy them out of surplus earnings or whenever it has the power to do so. This meets the wishes for municipal ownership. I can guarantee the resignation of the present management in its entirety whenever the city or anyone else is in a position to manage and protect the property, giving us a fixed return on a fair valuation. If the city acts promptly, we will discontinue all litigation. This may be regarded as a complete surrender, and I hope it will bring to an end the bitter feeling against us." Petitions for a referendum on the 6-cent fare resolution enacted by the city council are being circulated. The filing of these petitions automatically suspends the operation of the 6-cent fare resolution until February 20, 1919, the earliest date for another referendum on the action of the city council. The new agreement between the city and the traction company would put an end to this litigation and would be a solution to the many street car troubles. The agreement between the city and the company will necessitate action on the part of the state legislature, but president Connette assured the council that the International Railway would join the city in its efforts to secure the enactment of the necessary legislation. All of the members of the city council favor the proposed plan. J. C. Brackenridge, formerly of the Brooklyn Rapid Transit Company, who was retained by the municipal authorities last winter to make a survey of traction conditions, stated in his report that all the physical properties could be replaced new for \$26,210,080, and that after allowance for depreciation the property was not worth more than \$20,170,851. Of this amount the properties in the city are said to represent \$13,261,622. The bonded indebtedness amounts to \$75,588,000. By basing a rate of fare upon a fair valuation of the International properties within the city of Buffalo, municipal authorities believe that the company could be guaranteed an 8 per cent return with a 4-cent fare, or not more than a 5-cent fare. Last year the gross operating revenues amounted to \$8,171,886, of which \$6,616,964 was derived from passenger fares in Buffalo. In addition to defaulting on bond interest due November 1, the company has defaulted in the payment of city taxes amounting to \$409,199.20. The bond interest amounted to \$427,975. President Connette said: "We are using this money, which rightfully belongs to the city of Buffalo and the bondholders, to give good street car service. We will have to pay this money sooner or later. There is no escaping it. We are trusting to the sense of fairness, of justice, of the people of Buffalo to enable us to pay back this money we diverted to give good service now."

State Authorities Forbidden Fare Interference.

Springfield, Ill.—The Circuit court in St. Clair county has handed down a decision in the case of the Alton, Granite & St. Louis Traction Company against Edward J. Brundage, attorney general of the state; Hubert E. Schaumleffel, state's attorney of St. Clair county; Joseph P. Streuber, state's attorney of Madison county, and Thomas E. Dempsy, Frank H. Funk, Walter A. Shaw, Fred E. Sterling and P. J. Lucey, commissioners of the state public utilities commission. The case was brought as a bill in chancery for an injunction restraining the defendants from interfering with the company if it charged a higher rate of fare than that permitted by the laws of the state, and the decision of the master in chancery in favor of the complainants was approved by the court. The decision holds that the capital stock of the company is \$3,189,000, that its indebtedness on which it has to pay interest is \$2,534,000, that its non-interest bearing debt is approximately \$200,000, and that the physical valuation of its properties is \$3,115,000. The court further finds that although the company is economically managed its income at the present rate of fare is inadequate to pay its operating expenses and fixed charges, that with certain increases permitted by the utilities commission the income will not be sufficient to pay these expenses "plus a fair and reasonable return on the investment," that the company has been unable to meet certain interest payments and that foreclosure proceedings would cause irreparable injury to the

complainant and its stockholders. The decision says: "The court further finds that the equities of this cause are with the complainant; that to compel the complainant to operate its road and to limit its interurban charges to the maximum rates prescribed by the laws of this state will amount to a confiscation of its property and deprive complainant of its property without due process of law in violation of the fourteenth amendment to the constitution of the United States and also in violation of section 2, article 2 of the constitution of the state of Illinois; and that to subject the complainant to prosecution and the penalties imposed by the laws of this state for making charges in excess of the maximum rates prescribed by the laws of this state would deprive complainant of its property without due process of law in violation of the fourteenth amendment to the constitution of the United States, and in violation of section 2, article 2, of the constitution of the state of Illinois; and the court further finds that the complainant is entitled to relief." The court issued an order restraining the defendants named from prosecuting the company for charging a higher fare than now allowed under the law, and ordered the company to make application to the commission for permission to charge such fares as "will yield sufficient revenue to pay its operating expenses and a fair and reasonable return in addition thereto on the capital invested by complainant in its said railway system, such rate of fares to be fixed and determined by the said public utilities commission." The court then said that if the complainant should attempt to put in force a higher rate than 3 cents a mile without receiving the permission of the utilities commission, the injunction would become inoperative. Following the decision of the court the commission granted the right to the company to charge a fare of 3 cents a mile. The train or cash fare is 5 cents higher than the ticket fare when the amount of the latter is 30 cents or less, and 10 cents higher when the ticket fare is in excess of 31 cents.

CITY PLANNING AND HOUSING

Architects, Artists and Sculptors Prepare City Plan.

Springfield, Ill.—A committee of architects, artists and sculptors, appointed by Governor Lowden as advisors to the Director of Public Parks and Buildings and Art, has formulated a tentative city plan for Springfield. George W. Maher, president of the Illinois Chapter of the American Institute of Architects, describes the plan and its principal features as follows: "One of the direct effects of the new Civil Administrative Code of Illinois now in force is the creation of the Department of Public Parks and Buildings, presided over by an executive officer called a director. The advisors to the director in respect to Public Parks and Buildings and Art are appointed directly by the governor of the state. Governor Lowden has established the very commendable precedent of recognizing the architects, artists and sculptors of the state by appointing such advisors from men of attainment who are recommended to him by the recognized architectural and art societies and other known organizations of the state. The Illinois Society of Architects and the Illinois Chapter, A. I. A., are properly represented on this committee. To promote this study of Springfield and prepare for a city-wide plan, the good offices of the state architect, Mr. Edgar Martin, who is also a member of the architects' organization, were employed. The result was a scheme embracing and defining certain important areas of the city of Springfield and properly co-relating all important civic improvements necessary for a definite city-wide plan. The tentative plan shows the establishing of vistas consisting of streets and thoroughfares leading up to the capitol, which is of the utmost importance. The plan also suggests a civic center and the location of a great Union Depot in proximity to the civic center. There is indicated on this tentative plan a location for the future governor's mansion directly on vista with the capitol building, also connecting with boulevards and Washington and Lincoln Park systems and the suggesting of a future city park. The plan thus proposed is the first step toward a city plan, and

as such meets with general approval. The fact that the placing of the new Centennial Building was determined by this tentative plan, and the cornerstone formally laid October 5, adds further significance to the wisdom of the act of the advisory committee. It is obvious that it will be necessary ultimately to establish by legislation certain acts creating building zones or building lines along proposed improvements that are agreed upon. This will be one of the first steps to be taken in order to safeguard future improvements that will require many years of growth before realization. One of the main features of the tentative plan approved by the advisory committee was the establishing of a main parkway boulevard spacious in width and extending directly from the state capitol building in grand vista to the tomb of Lincoln, a distance of approximately one and one-half miles. This is an auspicious beginning of city plan work visualizing possibilities far into the future. Such a thoroughfare, lined as it should be with beautiful architectural buildings, public and semi-public edifices, representing the art and culture of the Middle West, would be the mall of the capitol city of the State of Illinois. There is in contemplation at the present moment an agitation in the state for establishing a great university at Springfield which is proposed to be located immediately adjoining the park area surrounding the Lincoln resting place."

Vote to Form Port District.

Tacoma, Wash.—At the recent election, Pierce county, in which this city is located, voted by a large majority in favor of the establishment of a port district which, under the state law, will have authority to study the local problems and devise a general scheme for the development of the port of Tacoma. The district includes the entire county and will be under the management of three elected commissioners who will serve without salary. The state law permits such a district to raise funds by an annual tax not exceeding two mills on the dollar of taxable property in the county. Until a definite plan has been prepared by the commissioners and adopted by public vote, no money can be expended beyond that necessary for the presentation of the plans. Thereafter only the amount raised by the tax can be expended until the people by a 60 per cent vote have authorized the issue of bonds. These bonds are limited to 3% and may be for a term of 50 years.

Housing Survey for Harrisburg.

Harrisburg, Pa.—Following numerous complaints about the poor and unsanitary housing conditions in Harrisburg, Mayor Keister has said that he would probably have a survey made within the near future, in an effort to correct these unhealthful conditions. The mayor declared that he has made personal investigations of some of the complaints and was greatly surprised to learn of the poor housing that existed in certain sections of this city.

Should the survey be made, the chief executive stated, every possible effort will be made to put into tenantable shape a number of houses which have been known to the police, as well as the city health bureau, to be of unsanitary condition for years, and time and time again efforts have been made to right them, but he does not believe that a thorough investigation has ever been made. In many houses four or five live in each room. They are all tenanted by colored people of the lowest class, who cook, eat and sleep in these poorly constructed apartments.

The mayor further said that he has taken the matter up with city solicitor Fox and learned that the survey would first have to be made by the city health bureau and from the report made by that bureau the police would have the authority to act. Should the health bureau order the owners of these houses to put them into sanitary and tenantable shape, and they refuse, the police will have the authority to close up these houses, placard them and keep them from being rented until they are repaired.

Many of these houses in some sections of the city are in sanitary condition, the mayor contended, yet they are in such shape that they are unfit for any person to live in.

NEWS OF THE SOCIETIES

Dec. 3-6.—AMERICAN SOCIETY OF MECHANICAL ENGINEERS. Annual meeting, New York, N. Y. Secretary, 29 West 39th St., New York City.

Dec. 9-11.—PORTLAND CEMENT ASSOCIATION. Meeting to be held at the Hotel Biltmore, New York City. Headquarters, 111 W. Washington street, Chicago, Ill.

Dec. 11-13.—HIGHWAY INDUSTRIES ASSOCIATION. Convention at Chicago, Ill. Headquarters, 1410 H St., N. W., Washington, D. C.

Dec. 9-13.—AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Convention at Chicago, Ill. Acting secretary, A. Dennis Williams, Morgantown, W. Va.

Dec. 27-Jan. 2.—AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Annual convention. Boston and Cambridge, Mass. Secretary's office, Smithsonian Institute, Washington, D. C.

Jan. 13.—AMERICAN INSTITUTE OF CONSULTING ENGINEERS. Annual meeting, New York City. Deputy secretary, E. Etchelle, 35 Nassau St., New York City.

Feb. 18-21, 1919.—AMERICAN ROAD BUILDERS' ASSOCIATION. Sixteenth annual convention and Ninth American Good Roads Congress under the auspices of the A. R. B. A., Hotel McAlpin, New York, N. Y. Secretary, E. L. Powers, 150 Nassau street, New York, N. Y.

City Managers' Association.

The city-manager plan in its national reconstruction aspects was given significant treatment at the fifth annual convention of the City Managers' Association, which was held in Roanoke, Va., November 6, 7 and 8, with headquarters at the Hotel Roanoke. As usual, one of the most successful and helpful features of the convention was the round-table discussion of concrete experiences.

At the opening morning session ex-president Charles E. Ashburner, Norfolk, Va., addressed the meeting on "The Ten-Year Test of the City-Manager Plan." In the afternoon, after a business session and the presentation of the annual report of the secretary-treasurer, Manager Harrison G. Otis, of Auburn, Me., the "Model Charter Proposed by the National Municipal League," and "Proportional Representation" were discussed. Myron H. West, president, American Park Builders, Chicago, spoke on "City Planning for After-War Conditions."

At a dinner in the evening, given by the Roanoke Chamber of Commerce, manager J. E. Barlow of Dayton, presided. Lucius E. Wilson, New York City, gave an address on "Establishing and Maintaining the Commission-Manager Government."

Thursday was "War Day." With Thomas J. Murphy, High Point, N. C., presiding, four-minute reports were presented by each manager on the general subject, "War Activities of Cities Under the Manager Plan."

This session was followed by a get-together luncheon and an automobile trip through Roanoke and vicinity by courtesy of the local Chamber of Commerce.

At the evening dinner session Richard S. Childs, of the War Department, delivered an address on "Uncle Sam's Call to City Managers." "Efficient

Democracy" was the subject of Judge R. C. Jackson, city attorney, Roanoke.

Friday morning was devoted to the round-table session, city manager O. E. Carr of Springfield, presiding, and each subject being limited to twenty minutes and each speaker to five. All the managers present took part, the subjects being concerned with the duties and problems of the city manager and the finance, public safety, public welfare, public service and public utilities departments.

At the luncheon session former president Ossian E. Carr, delivered an address on "Progress, Prospects and Pitfalls of the New Profession."

In the afternoon, secretary Harrison G. Otis presided at a general session. "Municipal Accounting Under City-Manager Government" was the subject of F. Ernest Holman, Portland, Me., vice-president of the American Federation of Certified Public Accountants. Discussion during the rest of the session included such subjects as purchasing problems; the labor question; refuse disposal; under-studies; publicity methods, and annual reports.

At the final business session the following officers were elected for the ensuing year: President, Clarence A. Bingham, Waltham, Mass., and vice-

president, H. H. Sherer, Glencoe, Ill. Harrison G. Otis, Auburn, Me., was re-elected secretary-treasurer of the association, recognizing the excellent service he has rendered during the past year.

American Electric Railway Association.

The war problems of the electric railway industry were discussed at a conference of the American Electric Railway Association, held in New York City on November 1, instead of the customary convention. The work of the Electric Railway War Board was described by president John J. Stanley and secretary-treasurer E. B. Burritt. The report of the war board was presented by P. H. Gadsden. He reported that the war board is meeting with splendid success in securing the attention of Government officials. However, the railways have not had as good treatment as have other utilities. It is the experience of utilities, Mr. Gadsden said, that in the states where public utility commission control exists, the utilities are treated more fairly than where appeal has to be made to municipalities. It was clear to the war board, however, that Federal aid was needed. The board has, therefore, secured the cooperation of Government officials and organized labor in presenting the situation clearly to the President. The situation in the in-

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PROBLEMS CITIES ARE STUDYING WITH EXPERTS

Walkerville, Ont., has prepared plans for a complete FILTRATION PLANT. The consulting engineer is R. Winthrop Pratt.

Parkville, Mo., has had plans prepared for the construction of a DAM by the consulting firm Tuttle-Ayers-Woodward Engineering Co.

A WATER TOWER and TANK are to be built by Birnamwood, Wis., according to plans prepared by the consulting engineer, W. G. Kirchofer.

The Broadwater Irrigation District, Toston, Mont., is contemplating the construction of an IRRIGATING SYSTEM, according to plans prepared by the engineer, L. Poole.

Plans have been prepared for WATERWORKS IMPROVEMENTS in Kingfisher, Okla., by the consulting engineering firm of Black & Veatch.

Weston, Mo., plans to improve its WATERWORKS SYSTEM, involving the construction of a brick and concrete reservoir, and pumping installation. The consulting engineer is C. E. McCrea.

An OUTFALL SEWER is to be built by the city of Beaver Falls, Pa. Preliminary plans are being prepared by the consulting engineering firm of Morris Knowles & Co.

Warrenton, Ore., has had plans prepared for dredging the channel in Skippano river to afford DOCK FACILITIES. The consulting engineers are the firm of Barr & Cunningham.

WATERWORKS IMPROVEMENTS are to be made by the city of Worland, Wyo., according to plans prepared by the consulting engineer, C. C. Carlisle.

A steel highway BRIDGE is to be built across Neuse river at Oak Bridge by the city of Kinston, N. C., according to plans prepared by I. R. Eagle, consulting engineer.

The Black Bayou Drainage District, Washington county, Greenville, Miss., is to make DRAINAGE IMPROVEMENTS by installing pumping machinery and appurtenances for duplicating pumping units, according to plans prepared by the Morgan Engineering Co., consulting engineers.

INDUSTRIAL NEWS

Industrial Reconstruction Conference.

Industry's view of the solution of many of the questions that confront the country in shifting back to a peace basis will be brought out at a conference of industrial War Service Committees to be held at Atlantic City, December 3, 4, 5 and 6, under direction of the Chamber of Commerce of the United States. There will be brought together at this meeting from four thousand to five thousand industrial leaders, all of them duly elected representatives of nearly four hundred industries. Thirty-five group meetings will follow on the last three days, at which the problems will be taken up. Reconstruction problems will be approached from many angles and the men who have taken the lead in organizing these committees to cooperate with the Government in prosecution of the war believe that many helpful suggestions will come out of this conference.

One aim of the Atlantic City conference is to federate the war service committees in some fashion that will give the Government during the reconstruction period a definite point of contact with industry. Many of the committees represent units in industry which never have been organized and in dealing with such a federation the Government would be more nearly in touch with industry as a whole than if it dealt exclusively with trade associations.

Many of the war service committees were formed at the request of the Government under the direction of the Chamber of Commerce of the United States with a view to giving the Government a point of contact with industries during the war. The Government has worked out with these committees many problems of conversion and conservation and planned with them many of its contemplated measures as regards price-fixing, priorities, and other controls before putting them into force. The committees when federated will work in close cooperation with the Chamber of Commerce.

There are many indications that business interests will advise that much of the present Government system of control be retained after the war. Business men much prefer to see, for instance, prices more or less stabilized than fluctuating either up or down. Also, they realize that some measure of priorities may be necessary for some time to come.

Among the questions which will be given consideration are:

What legal methods or means could be introduced in the crafts better to stabilize prices, during the reconstruction period, affected by the following: (a) inventories on hand; (b) orders placed at war prices but not delivered; (c) labor costs and conditions; (d) increased taxes; (e) increased rates of interest; (f) an estimated increased demand for nonwar materials restricted during the war period; (g) will an in-

creased production of your commodity increase the price of material or labor, or will a controlled redistribution of material and labor from war industries prevent such an increase? (h) discuss the practice of the sale of commodities at a price less than the cost of production; its injury and disturbance on the industries and the ultimate consumer; what methods would you suggest to remedy this evil? (i) if the Government sees fit to dispose of used materials and products in the open market, what effect will it have on your production and the sale of new goods? At home? Abroad? (j) if it is not advisable for the Government to sell these goods on hand, either home or abroad, what shall it do with them? (k) in this connection, what point of contact should business interests have with the Governmental departments in the sale or disposition of these various commodities?

What is your financing problem during the reconstruction period? Do you recommend Governmental aid? Is financial legislation needed? Should the Capital Issues Committee be continued during this period?

What method would you suggest for the cancellation of Government war orders with your craft that would create the least amount of hardship for the industries Board or any of its divisions, normal commercial conditions?

Have you any suggestions to make as to the continuation of the War Industries Board of any of its divisions, or any other Governmental departments during the period of reconstruction—such board or departments to have the authority to control materials and regulate prices. If so, for what period?

What intelligent control of materials during the reconstruction period could the War Service Committee suggest which would prevent an over or under supply and avoid a demoralization of the market? Should this be controlled by the crafts or by a Governmental agency?

The value of a uniform method of cost accounting for the individual manufacturer and the craft as a whole. What suggestions of the conservation division made to your craft might, with financial profit to your craft, be continued during the readjustment period? Is it possible to maintain a conservation schedule after the war, without legislative authority?

What methods and practices, other than those your craft has already introduced, would simplify production, save materials, eliminate wasteful practices, reduce the number of styles, without destroying individual creativeness?

When the demobilization of military forces takes place, how can these men best be returned to their former industrial pursuits, and how will it affect your labor situation?

What suggestions have you to make to encourage and stimulate public work, such as the building of roads, pavements, water and sewer extensions, the construction of public buildings, school houses, etc.? What effect will it have on the labor market? In this connection consider the building program in the United States and especially the utilization or destruction of new plants built for war purposes. Location of convalescent and reconstruction hospitals near industrial centers, so that these men can be trained in the factories nearest to the hospitals without creating new vocational schools.

Road Machinery Manufacturers' War Service Committee.

A new war service committee, that of the manufacturers of road machinery, has been certified to the Government by the Chamber of Commerce of the United States. The new committee consists of the following: W. R. Wilson, American Road Machinery Co., Kennett Square, Pa., chairman; S. T. Henry, Western Wheeled Scraper Co., Aurora, Ill., secretary; S. F. Beatty, Austin Manufacturing Co., Chicago, Ill.; Roy E. Adams, J. D. Adams & Co., Indianapolis, Ind.; C. O. Wold,

The Russell Grader Mfg. Co., Minneapolis, Minn.

The Tiffin Wagon Company, Tiffin, O., announces that H. C. France has succeeded the late Mr. W. K. Shelly, who died Nov. 3, as secretary and general manager. Mr. France had been Mr. Shelly's assistant for the past five years, and had been in close touch with the details of the business. The company's efforts will be directed towards development and expansion of the business along the lines mapped out by Mr. Shelly.

Hydrated Lime for Concrete Bridges.

The Lime Association, 503 Riggs bldg., Washington, D. C., announces that the new standard specifications issued by the bridge department of the Tennessee State highway commission calls for 40 lbs. of hydrated lime per cubic yard to be used in all bridge concrete in the future. The specification has been approved at the Office of Public Roads, Washington, D. C.

NEWS OF THE SOCIETIES

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dustry is so bad at present, he said, that it is necessary to explain to the public just how critical the electric railways' condition is. The publication of data by the war board has helped in this direction. He recommended monthly publication of local statements so as to keep a utility's clientele posted as to the actual circumstances.

Taking up the question of the awards of the National War Board, Mr. Gadsden estimated that the net income of the electric railways of the country is not more than \$25,000,000 to \$30,000,000. And yet, he estimated, the decisions as to wages if generally applied will increase the expense by possibly \$100,000,000. In such case it is doubtful if the industry can earn one-half its interest charges. The Labor Board apparently assumed that fares could be increased to meet the increased costs, but this has not proved true. Even if fares could be increased the result of such increase is problematical. In this connection Mr. Gadsden gave a number of examples showing how in certain cases special conditions have been taken into account.

A discussion of the needs of the interurban electric railways was led by Arthur W. Brady, president Union Traction Company of Indiana. One of the reasons why interurbans are so short of money at present, it was decided, is that some lines were overbuilt. In the early days steam road service was poor and there was a demand for additional transportation, and many interurbans were built paralleling the steam roads. Another cause of diffi-

culty is the rapidly increasing number of automobiles.

A third, and, perhaps, the most important reason for the present condition, was stated to be the legal restrictions imposed on interurban railways, and by the failure of public officials to recognize their actual needs. Many of the statutory and other restrictions, like the 2-cent fare laws, were aimed primarily at steam roads. Due to competition, however, the effect has been to limit the interurban fare, although the roads found that they could not continue to operate profitably at this low rate. Since the United States Railroad Administration has increased the steam road rate to 3 cents per mile, electric railways in some sections have been able to obtain the advantages of this increase so that the present situation for them is not without hope.

At the afternoon session the following papers were read: "Lightweight Cars," by Henry G. Bradlee, president Stone & Webster Management Corporation, Boston, Mass.; "The Zone System," by Thomas Conway, Jr., professor of finance, University of Pennsylvania; "Higher Unit Fares," by L. S. Storrs, president The Connecticut Company, New Haven, Conn.; "Public Aid," by Homer Loring, of Loring & Company, Boston, Mass., and president Fort Dodge, Des Moines & Southern Railroad, Boone, Ia., and "Public Ownership," by Richard McCulloch, president United Railways, St. Louis, Mo.

In discussing higher unit fares Mr. Storrs stated that he had not included in his paper any discussion of the exact financial results secured by 6-cent and similar fares, but he would mention a few instances from his personal experience. One company with an increase in fare from 5 cents to 7 cents suffered a decrease of 32 per cent in revenues, while another company of the same size and with the same increase in fare secured a revenue increase of 18 per cent. Another company with an increase from 5 to 6 cents was not able to change the current 2 per cent loss as compared to the same period of the preceding year, but when it increased the fare further to 7 cents it secured a revenue increase of 18 per cent. Still another company, with annual revenues of \$11,000,000, was able after twelve months of operation with a 6-cent fare to secure only \$30,000 of additional revenue. On the basis of such experiences, Mr. Storrs said, he hesitated to make any prediction in regard to the effect of a higher fare under present abnormal conditions.

P. J. Kealy, president, Kansas City Railways, said that, although almost all of the discussion had concerned the serious plight of the electric railways at the present time, it was generally recognized that existing conditions were more or less temporary. Under the circumstances he did not feel that it was the proper time to sell any business. To cry poverty and at the same

time to make a good sale of utility property would be a job which he would not care to undertake. Moreover, in most states there are constitutional restrictions against municipal ownership on a widespread basis, and probably two years would be required in order to secure the necessary amendments and popular authorization. Within this time the electric railway industry will either be dead or headed toward recovery.

James D. Mortimer, North American Company, Milwaukee, Wis., moved that the association recommend to its member companies full cooperation with public authorities looking to the acquisition of utility properties. Upon motion the resolution was referred to the executive committee for such action as it deems proper. The resolution said that financial conditions are such that adequate service is impossible; that electric railway transportation is a public necessity and that the only solution for insurance of continuity of service would be public ownership.

P. H. Gadsden, of the war board, said that it would be unfortunate to advocate general municipal ownership, although public ownership might be best in some cases. He said that a tabulation of 388 electric railways, representing over 63 per cent of the electric mileage of the country, shows a falling off in income of 82 per cent for the first six months of 1918, as compared with the corresponding period of last year. He offered a resolution, which was adopted, urging consideration of the problems of the industry by the public; a radical revision of electric railway local franchises, and the appointment of a committee to study of reconstruction problems.

The executive committee of the association at a meeting on the previous day, elected the following officers: President, J. H. Pardee, president, J. G. White Management Corporation; vice-presidents, Richard McCulloch, president, United Railways of St. Louis; T. S. Williams, president Brooklyn Rapid Transit System; R. I. Todd, president, Indianapolis Traction & Terminal Co.; P. J. Kealy, president, Kansas City Railways; Secretary-treasurer, E. B. Burritt, re-elected.

American Road Builders' Association.

The board of directors of the American Road Builders' Association recently held at the Automobile Club of America, in New York City. Several changes in the by-laws were considered, and a new executive committee was appointed for the coming year. One of the changes in the by-laws provides for the increase of the executive committee from three to five and the inclusion of the president of the association as well as the secretary as an ex-officio member.

The new committee consists of president Arthur H. Blanchard; secretary E. L. Powers; Nelson P. Lewis, chief engineer of the Board of Estimate

and Apportionment of New York City; Lieut.-Col. William D. Uhler, formerly chief engineer of the Pennsylvania state highway department, and William R. Smith, president of the Lane Construction Corporation.

American Society of Mechanical Engineers.

The annual meeting of the American Society of Mechanical Engineers will be held in New York City on Dec. 3 to 6 inclusive. Tentative plans for the session of Dec. 4, which will be devoted to the general topic "Human Engineering," include the following papers: "Organization," "Standardization and Administration of Wages," "Non-Financial Incentives," "Incentive of Control in Industry," "Intensive Training" and "Human Relations in Industry." One session will be under the auspices of the gas power sub-committee, with papers on oil engines and cooling losses in combustion engines. Another session will be a joint session with the American Society of Refrigerating Engineers, which holds its annual convention with the A. S. M. E.

PERSONALS

Wasser, T. J., county engineer of Hudson county, N. J., has been appointed to the executive section, highways transport committee, and is assigned to the work of keeping the New Jersey section of the Buffalo-Baltimore army route clear during the coming winter.

Siems, J. Bernard, formerly assistant engineer, Baltimore, Md., water department, and recently water engineer at Camp Meade, Maryland, has been appointed principal assistant engineer of the Baltimore department.

Saville, Charles, director of sanitation, department of public health, Dallas, Tex., has been made director of the recently organized department of industrial development of the Chamber of Commerce and Manufacturers' Association.

Lavery, John G., city engineer of Summit, N. J., has resigned to enter the service of the United States Housing Corporation, with headquarters at Pittsburgh.

Rigby, W. B., Maquoketa, Iowa, has been appointed county engineer of Jackson county, to succeed Charles M. Fisher, who has resigned.

Laboon, John F., has become a member of the firm of Chester & Fleming, consulting engineers, Union Bank building, Pittsburgh, Pa. He was formerly in the firm's employ, but has recently been with the Pittsburgh Filter Manufacturing Company.

Wynn, W. A., formerly engineer of the Bureau of Township Highways of the Pennsylvania state highway department, with which he was connected for almost 14 years, has resigned to conduct engineering work for an organization of oil companies in the Texan fields.

ADVANCE CONTRACT NEWS

ADVANCE INFORMATION BIDS ASKED FOR

CONTRACTS AWARDED ITEMIZED PRICES

To be of value this matter must be printed in the number immediately following its receipt, which makes it impossible for us to verify it all. Our sources of information are believed to be reliable, but we cannot guarantee the correctness of all items. Parties in charge of proposed work are requested to send us information concerning it as early as possible; also correction of any errors discovered.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Ill.	Chicago	11 a.m., Nov. 30	Construction of Michigan Ave. improvement, being the complete improvement of the avenue as widened, and the necessary approaches thereto, together with a connecting bridge across the Chicago river	Michael J. Faherty, Pres., Bd. of Local Impr., City Hall.
Miss.	Hattiesburg	2 p.m., Dec.	2..Improvement of about 5 mi. of road, involving grading, draining and surfacing	Herbert Gillis, Chancery Clk.
Okla.	Mangum	3 p.m., Dec.	2..Earthwork, bridges and culverts	R. F. Maloy, Co. Clk.
Ind.	Fort Wayne	11 a.m., Dec.	4..Grading, graveling or macadamizing highways in Madison township	Will Johnson, Co. Aud.
N. Y.	New York	2 p.m., Dec.	5..Regulating and repaving with sheet asphalt on a concrete foundation, including new sewer manhole head, covers and rings; 6-in. granite curb	Frank L. Dowling, Boro. Pres., Manhattan.
Tex.	Brownwood	Dec.	9..Grading, paving and draining 12 mi. of road, including erection of concrete bridges and culverts	R. A. Nichols, Hwy. Engr.
Minn.	St. Paul	10:30 a.m., Dec.	9..Grading and improvement of streets	H. W. Austin, Purch. Agent.
Wash.	Olympia	2 p.m., Dec.	9..Surfacing with gravel 6 mi. of highway	James Allen, Secy., State Highway Commission.
Minn.	Minneapolis	11 a.m., Dec.	16..Furnishing one motor tractor for hauling gravel and road grading	Al. P. Erickson, Co. Aud.
W. Va.	Williamson	Dec.	19..Building 5.5 mi. of road, to cost about \$70,000, involving approximately 500 cu. yd. rubble masonry, grading, clearing, and 1,700 lin. ft. 12-18-ft. vitrified pipe	Elihu Boggs, Co. Clk.
SEWERAGE.				
Ont.	Atwood	noon, Nov. 30	Construction of drain system	Geo. Lockhead, Twp. Clk.
Minn.	Shakopee	8 p.m., Dec.	2..Laying sewer in city street	P. J. Schwartz, City Rec.
Wis.	Appleton	2 p.m., Dec.	4..Laying sewer in city street	E. L. Williams, City Clk.
Ind.	Fort Wayne	10 a.m., Dec.	4..Constructing two macadam roads in Madison and Bel River townships	Will Johnson, Auditor.
Ariz.	Globe	noon, Dec.	5..Construction of sanitary sewers, involving approximately 18 mi. of sewer lines, 280 manholes, 22 flush tanks and 76 lampholes, and a sewage disposal plant, consisting of two reverse flow Imhoff tanks, two sludge beds and chlorinator house with necessary excavation	J. F. Mayer, City Clk.
Minn.	St. Paul	10:30 a.m., Dec.	9..Construction of sewers on several streets	H. W. Austin, Purch. Agent.
S. C.	York	noon, Dec.	10..Drainage improvements	Will D. Alexander, Charlotte, N. C.
Miss.	Pasagoula	Dec.	26..Paving and building sanitary storm sewers	X. A. Kramer, Engr., Magnolia, Miss.
WATER SUPPLY.				
Va.	Yorktown	Dec.	2..Installing two 100,000-gal. steel water tanks and towers (Spec. No. 3646)	Bureau of Yds. & Docks, Navy Dept., Washington, D. C.
N. Y.	New York	2 p.m., Dec.	3..Furnishing all labor and material required for the installation of plumbing work for the new magistrate's court for women	Frank L. Dowling, Pres., Boro. of Manhattan.
Wyo.	Worland	Dec.	4..Building and extending water mains	C. C. Carlisle, 212 First Nat. Bank Bldg., Cheyenne, Wyo.
Miss.	Greenville	10 a.m., Dec.	10..Furnishing and installing pumping machinery and appurtenances for duplicate pumping units having a combined capacity of 80,000 G.P.M. against low heads	Morgan Engineering Co., Memphis, Tenn.
O.	Akron	noon, Dec.	20..For the purchase of a second-hand steel water stand-pipe, 65 ft. high, 25 ft. in diameter, with ladder and 8-in. overflow, and weighs about 40 tons	
LIGHTING AND POWER.				
D. C.	Bellevue	Dec.	2..Installing electric traveling cranes (spec. No. 3643)	Bureau of Yds. & Docks, Navy Dept., Washington, D. C.
Cal.	Mare Island	Dec.	2..Installing electric traveling cranes in structural shop (spec. No. 3240)	Bureau of Yards and Docks, Navy Dept., Wash., D. C.
Wis.	Appleton	4 p.m., Dec.	4..Furnishing lanterns, harps, transformers and circuit breaker relays for the city street light system	E. L. Williams, City Clk.
N. Y.	New York	Dec.	9..Installing electric traveling cranes in light machine and electric shop (spec. No. 3609)	Bureau of Yards and Docks, Navy Dept., Wash., D. C.
FIRE EQUIPMENT.				
N. D.	Grand Forks	4 p.m., Dec.	2..Furnishing 500 ft. cotton rubber-lined fire hose coupled with automatic couplings	W. L. Alexander, City Aud.

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
BRIDGES.				
Wis., Sheboygan.....	4 p.m., Dec.	2..	Construction and completion of bridge over the Sheboygan river, consisting of one fixed span, one bascule and the necessary piers, abutments and approaches....	John Kummer, Comptroller, Bd. of Pub. Wks.
Miss., Hattiesburg....	2 p.m., Dec.	2..	Constructing bridges in connection with road improvements.....	Herbert Gillis, Chancery Clk.
O., Minerva.....	10 a.m., Dec.	2..	Reconstruction of bridge.....	W. C. Schick, Clk.
Okla., Mangum	Dec.	2..	Building bridges, culverts, etc., on State Aid Projects Nos. 2, 3, 4 and 5.....	R. F. Maloy, Co. Clk.
Wis., Sheboygan.....	4 p.m., Dec.	2..	Construction of bridge over Sheboygan River.....	Bd. of Pub. Wks.
Ind., Fort Wayne.....	10 a.m., Dec.	6..	Repairing bridge and furnishing creosote block floor; reconstructing concrete culverts.....	Will Johnson, Co. Aud.
N. C., Kingston.....	Dec.	9..	Construction of steel highway bridge with draw span and substructures across Neuse River, with concrete abutments and piers.....	I. R. Eagle, Engr., Newbern, N. C.
Fla., Marianna.....	Dec.	19..	Construction of reinforced concrete bridge.....	J. A. Maitland, Engr.
Fla., Tallahassee.....	4 p.m., Dec.	19..	Construction of a reinforced concrete arch bridge with steel bascule life span across the Apalachicola river, consisting of seven concrete arches of 110 feet clear span, with a 100-ft. clear channel opening, with an 18-ft. roadway, containing approximately 5,600 cu. yd. concrete, 425,000 lbs. reinforcing steel, 179,500 lbs. structural steel, castings, operating machinery, etc....	Wm. C. Cocke, State Road Comr., State Road Dept., Tallahassee.
Ont., Peterboro.....	noon, Dec.	20..	Construction of reinforced concrete bridge of 15 arches, with approaches, etc., over the Otonabee River.....	R. H. Parsons, City Engr.
MISCELLANEOUS.				
N. Y., New York.....	10 a.m., Nov.	30..	Furnishing gasoline, kerosene, lubricating oils and greases for the Army.....	Quartermaster Corps, U. S. A., 51 Chambers St., N. Y. City.
Ont., Atwood.....	2 p.m., Nov.	30..	Construction of drain.....	Geo. Lochhead, Twp. Clk., Elma
Pa., Rockview.....	noon, Dec.	3..	Furnishing and delivering limestone crushing plant equipment, tramway terminal plant equipment, electrical equipment, etc.....	Bd. of Inspectors, Western Penitentiary, Northside, Pittsburgh, Pa.
Cal., Burbank.....	7.30 p.m., Dec.	3..	Furnishing a road roller.....	City Clk.
N. Y., Albany.....	noon, Dec.	3..	Completion of canal, to cost about \$327,000.....	W. W. Wotherspoon, Supt. of Pub. Wks., Capitol, Albany, N. Y.
O., Canton	Dec.	3..	Construction of ditch to drain about 20 acres of swamp land in Lawrence and Jackson townships.....	Co. Comrs.
Tex., Ballinger.....	Dec.	1..	Building concrete dam over Colorado River to irrigate 27 acres of land.....	F. Pocorny, County Engr.
R. I., Newport.....	5 p.m., Dec.	5..	Collection and disposal of city refuse.....	F. N. Fullerton, City Clk.
N. Y., Brooklyn.....	noon, Dec.	5..	Transportation and final disposition of ashes, street sweepings and rubbish for a period of three years, beginning Jan. 2, 1919.....	A. B. McStay, Comr.
N. Y., New York.....	noon, Dec.	6..	Delivering forage at the 25 stables of the department of street cleaning in the boroughs of Manhattan, Bronx and Brooklyn.....	A. B. McStay, Comr.
S. C., York.....	Dec.	10..	Construction of 26 mi. of dredged ditches, involving 861,860 cu. yds.....	Claude M. Inman, Chairman, Comrs. of Turkey Creek Dist. No. 1, York and Chester Counties.

ROADS AND STREETS

Atlanta, Ga.—Board of commissioners adopted the formal program of new work planned by the county for next year, including road building and other public improvements, in Fulton county, outside Atlanta, estimated at \$1,000,000. Work to be done in the city by the county will not be outlined until a request from the city officially is in the hands of the commission. Priority claims will be made to the government by the county for material on 17 of the jobs. The rest can be accomplished with such materials as the county has on hand. Among the improvements for the coming year is the paving of Lee St. and the East Point road, which will join West End and College Park with a concrete road and will insure a continuous smooth drive from East Point to Atlanta. Also the Marietta road from North Ave. to the Chattahoochee will be paved with Kentucky rock asphalt. The complete program as announced is as follows, priority claims to be made for the first 24 projects, as follows: Mayson and Turner, Bellwood viaduct to Hollywood road; pave, bitulithic concrete. Simpson St., near West Lake to Hightower; pave, Kentucky rock asphalt. South Pryor St., Ridge to Fair Park Drive; pave, concrete. Ashby St., Deckner to Lakewood; pave and finish grading, concrete. Deckner, Stewart to Ashby; pave and concrete. Lee St., Church St. in East Point to Park Ave.;

pave and concrete. Stewart Ave., near Glenn to county line; pave and concrete. Cleveland Ave., Main to Brown Mill road; pave and concrete. Nacoochee drive; pave, Kentucky rock asphalt. Jonesboro road, widen and pave near South River to county line; concrete. Cascade Ave., Holderness to Fairburn road; pave, Kentucky rock asphalt. Glenn St., change grade and repave at Stewart Ave.; bitulithic concrete. Brady Ave., 10th to Howell Mill road; bitulithic concrete. Marietta St., river to North Ave.; Kentucky rock asphalt. Howell Mill road, Marietta St. to river; Kentucky rock asphalt. Gordon, Hightower to river; Kentucky rock asphalt. Pace's Ferry, Peachtree to Howell Mill; Kentucky rock asphalt. Culverts: Brown's Mill road, South River, Brown's Creek. Jonesboro road, South River, Poole's Creek. Sheshire road, south prong Peachtree, north prong Peachtree. Johnson road, Proctor Creek. Payne road, branch near Hooper's. Bolton road, Utoy Creek, North arms. Collins bridge, fill in approaches. The following jobs will be done with material the county now has on hand: Culverts—Gordon St., Hunter to Hightower, gutter. Hollywood road, Payton to Bolton road, grade and macadam. Bowen St., Howell Mill road to Chattahoochee Ave., pave and macadam. Todd Ave., Virginia circle to Adair Ave., Adair Ave., Todd Ave., 400 ft. west; pave and macadam. Rice St., Marietta to county property; pave and macadam. Plaster Ave., Piedmont to Aromur; macadam. Chattahoochee (E. P.), Main to old Connally place; macadam. Gilbert road, Brown Mill to county line; gutter. Beatty St., Deckner-Dill; pave and macadam. Fairburn road, Ben Hill to Redwine road; pave and mac-

adam. Rogers Ave., grade to Walters road; gutter. Westwood Ave., city limits Walter road; pave and macadam. Beecher St., end of paving to Cascade; pave, grade and macadam. Old Jonesboro road, Ashby to Lee; pave and macadam. Mount Perrian, Howell Mill to Isom road; pave and macadam. Mount Perrian, Power's Ferry to Roswell; pave, grade and macadam. Virginia circle, Todd road to city limits; pave and macadam. Beecher St., Cascade to Greenwood; pave and macadam. Taliaferro road, Brown Mill to Jonesboro road; pave and macadam. Mayson and Turner, gutter Peachtree to Piedmont, East Point road, Cascade to Campbellton; pave and macadam. Utoy Ave., Old Sandtown to East Point; pave and macadam. Powers Ferry road, Mount Perrian to Crossroads; pave and macadam. Lawrenceville road, Crossroads to end of pavement; macadam. Simpson St., Bolton road to Hightower; grade. Johnson road, Marietta to Hollywood; finish grading. Spring St., 16th to Peachtree; finish grading. Highland sewer, Ponce de Leon to Angier; labor only. Bussey road, Cambridge Ave. to Newnan road; grade. Mathieson St., Piedmont Ave., south; grade. South Moreland, Confederate to Paper Mills; grade. Walters road, Westwood to Beecher; grade. Waterworks road, Waterworks to Albert Howell's; grade. Payne road, Bolton road east; grade.

Chicago, Ill.—City at the election, Nov. 5, voted in favor of issuing \$3,000,000 street improvement bonds.

Decatur, Ind.—It is reported Adams county will construct some 30 new roads this coming year, also Pulaski county has a considerable number of such im-

provements planned, and other counties are equally active.

Delphi, Ind.—The Meyer-Kiser Bank of Indianapolis purchased Deer Creek township road bonds. D. L. Musselman, county treasurer.

Indianapolis, Ind.—The board of public works ordered the Indianapolis Traction & Terminal Co. to pave between the street car tracks at Alabama St. and Massachusetts Ave.

Wichita, Kan.—Board of commissioners adopted resolutions, Nov. 12, to curb and gutter the following streets: Hydraulic Ave., from the north line of Douglas Ave. to the south line of 2d St.; Pennsylvania Ave., from the north line of Douglas Ave. to the south line of 2d St.; Emporia Ave., from the south line of Bayley St. to the south line of Harry St.; New York Ave., from the north line of Douglas Ave. to the south line of 2d St.; Mathewson Ave., from the north line of Douglas Ave. to the south line of 2d St.; Lorraine Ave., from the south line of English St. to the north line of Kellogg St.; Chautauqua Ave., from the north line of Waterman St. to the north line of Kellogg St.; Erie St., from the north line of Lewis St. to the north line of Kellogg St.; Volusia Ave., from the north line of Lewis St. to the north line of Kellogg St.; Volusia Ave., from the north line of Lewis St. to the north line of Kellogg St.; Indianapolis Ave., from the east line of Emporia Ave. to the west line of St. Francis Ave.; 21st St., from the west line of Market St. south to the west line of Arkansas Ave.; Indiana Ave., from the north line of Douglas Ave. to the south line of 2d St.; Lewis St., from the west line of Hillside Ave. to the east line of Poplar St.; English St., from the west line of Erie St. to the east line of Poplar St.; Minnesota Ave., from the south line of Central Ave. to the north line of Douglas Ave.; Waco Ave., from the north line of 18th St. to the south line of 21st St.; Wichita St., from the north line of 17th St. to the south line of 21st St.; Wellington Pl., from the north line of 17th St. to the south line of 21st St.; Park Pl., from the north line of 17th St. to the south line of 21st St.; 18th St., from the west line of Market St. to the east line of Waco Ave.; Grove St., from the south line of Central Ave. to the north line of 2d St.; Central Ave., from the west line of Hillside Ave. to the west line of Meade Ave.; Arkansas Ave., from the north line of 21st St. to the south line of 25th St.; 1st St., from east line of Indiana Ave. to the west line of Grove St.; Wabash Ave., from the north line of Douglas Ave. to the south line of 2d St.; Waterman St., from the west line of Hillside Ave. to the east line of Poplar Ave.; 20th St., from the west line of Lawrence Ave. to the east line of Arkansas Ave.; 19th St., from the west line of Lawrence Ave. to the east line of Arkansas Ave.; Ohio Ave., from the north line of Douglas Ave. to the south line of 2d St.; Jackson Ave., from the south line of 21st St. to the north line of 17th St.; Central Ave., from the west line of Fountain Ave. to the east line of Bluff St.; Central Ave., from the west line of Roosevelt to the east line of Clifton Ave.; Main St., from the south line of Bayley St. to the south line of Harry St.; Market St., from the north line of Orme St. to the south line of Harry St.; St. Francis Ave., from the north line of Orme St. to the south line of Harry St.; Santa Fe, from the south line of Gilbert St. to the north line of Harry St.; Indianapolis Ave., from the west line of Market St. to the east line of Water St.; Morris St., from the west line of Lawrence Ave. to the east line of Water St.; Morris St., from the west line of Santa Fe St. to the west line of Emporia Ave.; Lincoln St., from the west line of Santa Fe Ave. to the east line of Emporia Ave.; Lincoln St., from the west line of Lawrence Ave. to the east line of Water St.; Platt Ave., from the south line of 3d St. to the north line of 2d St.; Ash St., from the south line of Central Ave. to the north line of Douglas Ave.; Madison Ave., from the south line of Central Ave. to the north line of 3d St.; Madison Ave., from the south line of 2d St. to the north line of Douglas Ave.; Spruce St., from the south line of Central Ave. to the south line of 1st St.; Zimmerly St., from the west line of Santa Fe to the east line of Water St.; Boston Ave., from the west line of Santa Fe Ave. to the east line of Water St.; Harry St., from the east bank of Arkansas River to bridge over drainage canal; Pratt Ave., from the south line of Bayley to the south line of Harry St. L. W. Clapp, mayor.

Newport, Ky.—City commissioners will be permitted to at once sell \$100,000 worth of street bonds and the \$50,000 worth of garage bonds voted at the election in November, 1917.

Augusta, Me.—Sealed proposals received Dec. 4 for the purchase of the following bonds: \$500,000 war loan and \$218,000 highway. Joseph W. Simpson, treasurer.

Cambridge, Mass.—See "Sewerage."

Bozeman, Mont.—\$400,000 bonds to build road voted by Gallatin county. D. S. McLeod, county clerk.

St. Louis, Mo.—To build concrete highway covering Des Peres River, city plans to issue \$10,000,000 bonds. L. R. Bowen, city engr.

St. Louis, Mo.—Plans to issue \$1,000,000 bonds to build approach to free bridge. L. R. Bowen, city engr.

Buffalo, N. Y.—City council outlines plan involving \$12,000,000 worth of building. The city is already committed to many of the projects, but they were held up on account of the war. Among the things called for by the program are: Street repairing, Scajaquada Creek drain, Sloan drain to take care of the overflow from Little Buffalo Creek, enlarged sewers in Virginia, Spring and Pratt Sts., Michigan, Fillmore and Delaware Aves., and in Broadway, Bird Island pier improvement, widening of Ferry St., continuation of Buffalo Creek improvement, including a new bridge at Bailey Ave., new bridge over the river at Michigan Ave. to replace the jackknife bridge built in 1895 and too light for present traffic, removal of Hamburg and Elk Sts. viaducts, Hamburg turnpike paving, new barn for the bureau of streets, electrification of street lighting, replacing gas, building of the Ssawall highway, removal of the islands at the foot of Main St. in accordance with the city's agreement with the Michael interests, water works pipe extension, water system of sewage disposal, water filtration or sedimentation plant.

Elmira, N. Y.—Supervisors considering a statement from the state commissioner of highways showing a number of miles of highways in the different towns in this county and the amount required for their upkeep. The table of miles of highway and the cost of repair to each town is given as follows: Wellsburg, 3.04; Lowman-Waverly, Part 1, 0.11; Elmira-Lowman, 1.55; total amount, \$250. Ashland, 5.70; Horseheads-Corning, 5.93; Horseheads-Catlin, 3.30; Fitch's Bridge-Elmira, 0.23; total \$450. Big Flats, 9.46; Horseheads-Catlin, 0.42; Horseheads-Montour Falls, 0.87; total, \$50. Catlin, 1.29; Lowman-Waverly, Parts 1, 2 and 3, 9.35; total, \$450. Chemung, 9.35; Grand Central Ave., 0.05; Fitch's Bridge, Elmira, 1.75; Elmira-Lowman, 3.02; Elmira-North Elmira, 0.09; total, \$300. Elmira, 5.84; Erin-Horseheads, 3.12; Erin-Van Etten, 4.2; total, \$350. Erin, 7.34; Erin-Horseheads, 6.10; Grand Central Ave., Part 1, 1.49; Horseheads-Corning, 1.15; Horseheads, Montour, 1.75; Elmira-North Elmira, 1.65; total, \$600. Horseheads, 12.14; Southport, Part 1, 2.60; Southport, Part 2, 3.41; Southport, Part 3, 1.06; South Broadway, 1.02; Wellsburg, 1.47; Seeley Creek-Stauben Co. line, 4.02; total, \$790. Southport, 13.58; Horseheads-Montour Falls, 5.51; total, \$300. Veteran, 5.51; Erin-Van Etten, 2.65; total, \$150. Grand totals, 71.86 miles; amount \$3,600.

Liberty, N. Y.—At an election here the issuing of Chestnut St. improvement bonds carried.

Hoboken, N. J.—For paving 4th, 7th and 14th Sts. and Willow Ave., city rejected bids. New bids will be called in the spring.

Fremont, N. C.—See "Lighting and Power."

Morgantown, N. C.—Burke county received no bids for an issue Silver Creek township road bonds, \$5,000, offered Oct. 14.

Akron, O.—The city plans to repave S. Main St., from Crosier to Thornton St., without delay, replacing the wood blocks. Council ordered a bond issue of \$50,000 months ago to provide the money, but was defeated by the capital issues committee.

Akron, O.—County will shortly ask the capital issues committee for permission to issue bonds to repair Northfield and Arlington roads with brick, concrete or asphalt roads at a cost of \$160,000.

Canton, O.—A county road improvement program for next year, to include

about 25 mi. of paving and to cost in the neighborhood of \$900,000, has been prepared by the county surveyor and approved by the board of county commissioners.

Cleveland, O.—The county commissioners have decided to repair the following county roads within the city limits: Cedar Ave., S. E., from E. 89th St. to East Boulevard, S. E.; Broadway, S. E., from E. 34th St. to E. 55th St., and Clark Ave., S. W., from W. 25th St. to W. 58th St.

Dayton, O.—The city council has, by resolution, declared it necessary to grade and improve the north half of St. Charles Ave. from an alley west to an alley east of Creighton Ave.

Osnaburg, O.—The trustees of Osnaburg township will soon take new bids for grading Montgomery Hill. J. L. Sickafoore, Court House, Canton O., is engineer.

Marion, O.—The following paving improvements held up by the war are expected to go forward: E. Center St., Washington St., \$7,542.20, and Vine St., \$10,309.50; Marion-Marysville road, \$65,000; Marion - Upper Sandusky pike, \$102,000; Marion-Galion pike, \$55,000; Marion-Kenton pike, \$140,000; Everett road, \$30,000, and Dry Lane road, \$25,000; Weidemire pike, \$20,000.

Portland, O.—The capital issues committee reversed its former action and approved the proposed issue of Oregon highway bonds to the amount of \$590,000. This will permit the construction of nine units of Pacific and Columbia highways as rapidly as the commission desires. These units are as follows: Pass Creek canyon, Pacific highway, \$28,000; Yoncalla to Oakland, 14 mi., \$94,000; Diller to Myrtle creek, 13 mi., \$91,000; Wolf creek, 5 mi., \$30,000; Grants Pass south to Josephine county line, 6 miles, \$36,000; north slope Siskiyou mountains, 7 mi., \$49,000; Cascade Locks to Hood River, graveling, \$54,000; surfacing incomplete underground crossing ordered by Oregon public service commission between Medford and Ashland, \$15,000; to connect sections of Columbia River highway between Hood River and Mosier, 5 mi., necessary to make available Columbia River highway to Wasco county and the extensive district beyond, \$162,000; anticipated discount on bonds, \$31,000. Total, \$590,000.

New Brighton, Pa.—An ordinance has been finally approved after negotiations extending over a period of three years that provides changes and improvements which will involve several millions of dollars, and has been duly considered and approved by the federal government.

Pittsburgh, Pa.—An appropriation for laying a sidewalk on the lower side of Bigelow boulevard, from Seventh Ave. to Craig St., will be made in the next municipal budget.

Abilene, Tex.—Taylor county rejected bids for the following road bonds: District No. 2, \$20,000; district No. 3, \$15,000; district No. 4, \$15,000; district No. 5, \$25,000. E. M. Overshimer, county judge.

Houston, Tex.—The council passed to first reading an ordinance calling upon the Galveston, Harrisburg and San Antonio and the San Antonio and Aransas Pass to build a crossing and construct sidewalks at San Jacinto and Austin St. and Blodgett Ave.

Houston, Tex.—City probably will expend \$7,000 in covering wood block paving on city streets with tar. Recommendation was made by city engineer, E. Sands.

Montague, Tex.—H. B. Latham, judge of Montague county, will receive sealed bids until Dec. 2 for \$20,000 road bonds.

Seattle, Wash.—County Engineer Sam Hume points to four road projects that should be given attention by King county in the near future as essential to the best traffic interest. The paving of 10 miles of Des Moines-Tacoma highline road to the Pierce county line, cost approximately \$300,000; Bellevue and Newport road; this road would complete the circle of Lake Washington by highway and would consist of grading 3½ miles of road and the construction of a 2,000-ft. trestle between Bellevue and Newport. Road with the trestle cost \$60,000. Paving with a 20-ft. hard surface roadway of the 2-mile stretch of road between Renton and Renton Junction cost \$60,000, and paving with a 20-ft. hard-surface roadway of the 2-mile gap in the Auburn-Enumclaw road would cost \$60,000.

Spokane, Wash.—A comprehensive road building program for the state is being outlined by state legislators to be presented at the coming session of the legislature. State Senator P. H. Carlyon has started a campaign for a \$30,000 bond issue, guaranteeing interest and principal from the collection of automobile licenses, and providing for the immediate construction of more than 2,000 miles of permanent highways in the state.

St. Thomas, Ont.—In honor of the heroes who fell in the cause of freedom it has been suggested that a memorial driveway be constructed through the ravine that runs from Ross St., past Alma College, to Spohn's flats in the western part of the city.

Wisconsin—The Wisconsin highway commission has selected the following federal aid projects for improvements in 1919: Adams county, county seat, Friendship Wis.: Grading, draining, culverting and claying, 15 ft. wide, trunk highway 13, Adams-Kilbourn road, commencing at the end of macadam in village of Adams, thence about 6 miles; estimate, \$36,000; due from Government and state, \$24,000. Ashland county, county seat, Ashland, Wis.: Grading, draining and culverting trunk highway No. 10, Ashland-Hurley road, commencing at east county line, thence northwest about 7 1/4 miles; estimate, \$39,000; due from Government and state, \$26,000. Bayfield county, county seat, Washburn, Wis.: Grading, draining, culverting and partly surfacing trunk highway No. 10, Ashland-Superior road, commencing at work in the town of Barksdale, thence west about 12 miles; estimate, \$60,000; due from Government and state, \$40,000. Buffalo county, county seat, Alma, Wis.: Grading, draining, culverting and partly surfacing trunk highway No. 25, Fountain City-Marshland road, commencing at cross roads on E 1/4 line of section 31, township 19 north, range 10 west, thence northwest to a point on the south line of section 22, about 1/4 mile west of the southeast corner of said section in township 19 north, range 11 west; estimate, \$30,000; due from Government and state, \$20,000. Burnett county, county seat, Grantsburg, Wis.: Grading, draining, culverting and partly surfacing trunk highway No. 35, Frederic-Siren road, commencing at the south county line, thence north and east past Mud Hen Lake towards Siren, about 6 miles; estimate, \$27,000; due from Government and state, \$18,000. Clark county, county seat, Neillsville, Wis.: Grading, draining and culverting trunk highway No. 16, Owen-Abbottsford road, commencing at the southwest corner of section 33, township 29 north, range 1 west, thence east approximately 8.8 miles to village of Abbottsford; estimate, \$27,000; due from Government and state, \$18,000. Columbia county, county seat, Portage, Wis.: Grading, draining, culverting and graveling, 15 ft. in width, trunk highway No. 29, Portage-Columbus road, commencing at east end of gravel between sections 23-26, township 12 north, range 9 east, thence east approximately 5 miles; estimate, \$36,000; due from Government and state, \$24,000. Columbia county, county seat, Portage, Wis.: Relocating, grading, culverting and graveling, 15 ft. in width, trunk highway No. 29, Portage-Columbus road, commencing at intersection with Pardeeville road in southeast quarter of section 16, township 12 west, range 9 east, thence e and s to the gravel on the Wyocena road; estimate, \$36,000; due from Government and state, \$24,000. Crawford county, county seat, Prairie du Chien, Wis.: Grading, draining and culverting trunk highway No. 27, Prairie du Chien-Virqua road, commencing 600 ft. on the west quarter corner of section 29, township 7 north, range 6 west, thence northeast to point on the east and west quarter line of section 10, township 7 north, range 6 west; estimate, \$24,000; due from Government and state, \$16,000. Dodge county, county seat, Beaver Dam, Wis.: Grading, draining, culverting and graveling, 15 ft. in width, trunk highway No. 19, Watertown Plank road, commencing at west end of concrete on south line of section 36, township 9 north, range 14 east, thence west approximately 1 1/4 miles, to the quarter line of section 15, township 9 north, range 14 east; estimate, \$18,000; due from Government and state, \$12,000. Grading, draining, culverting and graveling, 15 ft. in width, trunk highway No. 26, Horicon-Mayville road, commencing at city limits of Horicon, thence northeast approximately 5 miles to construction limits in Mayville; estimate, \$45,000; due from Government and state, \$30,000.

Door county, county seat, Sturgeon Bay, Wis.: Grading, draining, culverting and graveling or stoning, 15 ft. in width, state trunk highway No. 17, Algoma-Sturgeon Bay road, commencing at south county line, thence north approximately 6 1/2 miles; estimate, \$39,000; due from Government and state, \$26,000. Douglas county, county seat, Superior, Wis.: Grading, draining, culverting and graveling, 15 ft. in width, trunk highway No. 11, Spooner-Superior road, commencing at south county line, thence north about 7 miles; estimate, \$57,000; due from Government and state, \$38,000. Fond du Lac county, county seat, Fond du Lac, Wis.: (a) Grading, draining, culverting and surfacing with 16-ft. concrete, trunk highway No. 15, commencing at north end of present concrete on east line of section 10, township 16 north, range 17 east, thence north to Van Dyne; estimate, \$86,000; due from Government and state, \$57,400; (b) Grading, draining, culverting and surfacing with 16-ft. concrete, trunk highway No. 15, Fond du Lac-Oshkosh road, commencing at Van Dyne, thence north to the north county line; estimate, \$15,000; due from Government and state, \$10,000. Forest county, county seat, Grandon, Wis.: Grading, draining, culverting and graveling, 15 ft. in width, trunk highways Nos. 14 and 32, Pelican-Crandon-Eagle River road, commencing at center of section 11, township 35 north, range 12 east, thence northeast to northeast corner of section 19, township 36 north, range 13 east; estimate, \$24,000; due from Government and state, \$16,000. Grant county, county seat, Lancaster, Wis.: Grading, draining, culverting and partly surfacing trunk highway No. 28, Platteville-Dubuque road, commencing at about 500 ft. southwest of Block House Bridge, thence north approximately 1.6 miles to foot of Hoadley Hill; estimate, \$27,000; due from Government and state, \$18,000. Grant county, county seat, Lancaster, Wis.: Grading, draining, culverting and partly surfacing trunk highway No. 30, Lancaster-Platteville road, commencing at a point in the northwest quarter of section 20, township 4 north, range 2 west, thence southeast to about east line of section 35, township 4 north, range 2 west; estimate, \$39,000; due from Government and state, \$26,000. Green county, county seat, Monroe, Wis.: Relocating, grading, draining and culverting trunk highway No. 42, Monroe-Monticello road, commencing at center of section 14, township 2 north, range 7 east, thence north approximately 6 miles; estimate, \$39,000; due from Government and state, \$26,000. Green Lake county, county seat, Berlin, Wis.: Grading, draining, culverting and partly surfacing with concrete and gravel, trunk highway No. 49, Green Lake-Berlin road, commencing at Green Lake Station on west line of section 13, township 16 north, range 13 east, thence north to point on about the north line of section 10, township 17 north, range 13 east; estimate, \$42,000; due from Government and state, \$28,000. Iron county, county seat, Hurley, Wis.: Grading, draining, culverting and partly graveling trunk highway No. 10, Arbor Vitae-Hurley road, commencing at east county line, thence northwest to Mercer; estimate, \$39,600; due from Government and state, \$26,400. Jackson county, county seat, Black River Falls, Wis.: Grading, draining, culverting and partly surfacing trunk highway No. 12, Black River Falls-Bau Claire road, commencing at south line of northwest quarter of section 4, township 22 north, range 4 west; estimate, \$24,000; due from Government and state, \$16,000. Jefferson county, county seat, Fort Atkinson, Wis.: (a) Grading, draining and culverting and graveling trunk highway No. 19, Watertown Plank road, commencing at gravel just west of Humphrey Crossing, thence east 8,600 ft. to old macadam; estimate, \$21,000; due from Government and state, \$14,000. (b) Grading, draining, culverting and graveling, 15 ft. in width, Watertown Plank road, trunk highway No. 19, commencing at east end of present state aid gravel on the north line of section 4, township 8 north, range 14 east, thence east approximately 1.8 miles to east end of Jefferson county; estimate, \$16,500; due from Government and state, \$11,000. Juneau county, county seat, Mauston, Wis.: Grading, draining and culverting trunk highway No. 71, Mauston-Elroy road, commencing in section 13, township 16, range 2 east, thence east into section 18, township 15, range 3 east; estimate, \$15,000; due from Government and state, \$10,000. Kewaunee county, county seat, Kewaunee, Wis.: (a) Grading, draining, culverting and graveling, 15 ft. in width, trunk high-

way No. 17, Kewaunee-Algoma road, commencing at Kewaunee bridge, thence north approximately 4 miles; estimate, \$22,200; due from Government and state, \$14,800. (b) Grading, draining, culverting and graveling, 15 ft. in width, trunk highway No. 17, Algoma-Sturgeon Bay road, commencing at north county line, thence south approximately 2 miles; estimate, \$12,000; due from Government and state, \$8,000. Lafayette county, county seat, Darlington, Wis.: Grading, draining and culverting, trunk highway No. 62, Darlington-Hicks Corner road, commencing at southern construction limits in city of Darlington, thence south approximately 6 miles to junction of Nos. 62 and 20; estimate, \$33,000; due from Government and state, \$22,000. Marathon county, county seat, Wausau, Wis.: (a) Grading, draining, culverting and partly surfacing with disintegrated granite, 15 ft. in width, trunk highway No. 16, Wausau-Biramwood road, commencing at end of concrete pavement in Wausau, thence east approximately 5 miles; estimate, \$36,000; due from Government and state, \$24,000. (b) Grading, draining, culverting and surfacing with disintegrated granite or gravel, 15 ft. in width, trunk highway No. 10, Wausau-Stevens Point road, commencing at southern county line, thence north to southeast corner of section 16, township 27 north, range 7 east; estimate, \$52,500; due from Government and state, \$35,000. Marquette county, county seat, Montello, Wis.: Grading, draining, culverting and surfacing with gravel, 15 ft. in width, trunk highway No. 10, Packwaukee-Westfield road, commencing at center of section 20, township 15, range 9 east, thence about 4 miles north; estimate, \$24,000; due from Government and state, \$16,000.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Augusta, Ark.—*R. Mobley, North Little Rock, Ark., for constructing 7.23 miles of macadam road from Cotton Plant south at approximately \$40,000.

Los Angeles, Cal.—Standard Oil Co., 1727 North Spring St.; F. C. Harris Oil Co., 701 College St.; A. F. Gilmore Co., Van Nuys Bldg., bidders for furnishing 22,000 bbls. 81% road oil, to municipal oil heating plant, between Nov. 25, 1918 and June 30, 1919.

Dudley, Ill.—*Buzzard & Simkle, of Dudley, for road in Grandview township. Commissioners of highways of Grandview township and Edgar county.

Lyndhurst, Ill.—*Romeo Biachi, for paving at public schools Nos. 5 and 6. Board of education.

St. Francisville, Ill.—*P. W. Lyahan, Vincennes, Ind., for road construction, at \$8,000.

Jersey City, N. J.—*W. T. S. Crichfield, Washington St., for repaving Mercer St., sheet asphalt, about \$18,000.

Newark, N. J.—*Newark Paving Co., 123 First St., for repaving Doremus and Wilson Aves., at \$127,281 and \$20,075, respectively. City comrs.

Dayton, O.—*Finke Engineering Co., for the grading of Illinois Ave. from Buchanan St. to Wayne Ave., at 60c. per cu. yd.

St. Helens, Ore.—*Kilby & Keller, Rainier, Ore., for constructing mile twelve on the Pittsburgh-St. Helens road at \$9,246.

Three Rivers, Que.—*Delaire & Pothier, for sidewalks, \$5,000. City council.

SEWERAGE AND SANITATION

Springfield, Ill.—Work of extending the city sewer system will begin immediately, according to an announcement by Commissioner Hamilton.

Cambridge, Mass.—The following bonds were favorably passed upon by the capital issues committee: Sewer construction, \$35,000; department equipment, \$35,000; ash-handling station, \$30,000; Charles River road, \$20,000; street improvement, \$3,000; Harvard bridge improvement, \$62,500.

Buffalo, N. Y.—See "Streets and Roads."

Akron, O.—The capital issues committee has passed favorably upon the issuance \$195,000 Goodyear Heights trunk sewer notes.

Canton, O.—Plans have been drawn, but work is temporarily delayed, for sanitary sewers in various streets, to cost \$140,000. Approximately 3 miles of 8 to 40-in. vitrified pipe. The city engineer is W. E. Sawyer, and the director of public service, Frank de Corps.

Hamilton, O.—City will take bids, Dec. 10, for the following assessment bonds: Lindenwald sanitary sewer, \$52,442.60; 11th, 12th and 13th St. sanitary sewer, \$2,918.60. Ernst E. Erb, city auditor.

Hamilton, O.—City will soon take bids for a sanitary sewer to be constructed in Vanderveer and Campbell Sts., at the cost of \$26,928. E. F. Weaver, city engineer. Ernest E. Erb, city auditor. 18,500 lin. ft. 5 to 11-in. vitrified pipe; 120 lin. ft. lead pipe; 30 manholes.

Almonte, Ont.—Town council contemplates laying of sewers on various streets. Wm. Watchard, engr.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Bridgeport, Conn.—*Pierce Mfg. Co., 785 Housatonic Ave., at \$13,549, building concrete and vitrified pipe sewers in East Main St., Ridgewood Pl., Seaview Terrace, Wood, Garfield and Granfield Aves., and in Berkshire Ave., to *Burns Co., 952 Main St., at \$3,414.

Detroit, Mich.—J. A. Mercier, 216 Hammond Bldg., \$110,983; J. Affeld, 1208 Ford Bldg., \$113,500; J. Porath, 34 McGraw Bldg., \$113,900, bidders for building 2,581 ft. 9 ft. 6 in. brick sewer in Gibson Ave. from 87 ft. north of Grand River Ave. to 14 ft. south of north line of Calumet Ave.

Omaha, Neb.—*H. J. Peterson, 3701 S. 17th St., for building 13,730 lin. ft. 8-21-in. sewer in Sect. Dist. Nos. 621, 625, 628, 629, 630 and 631, \$20,741.

Tulsa, Okla.—*C. O. & H. Frye, 5 Colonial Trust Bldg., at \$3,593, for building sewers in Dist. No. 144, and *Comstock & Hanson, Tulsa, for sewers in Dist. No. 143.

Kenosha, Wis.—*P. Frandsen, Kenosha, for installing sewers in Racine Ave. and Adams St., \$14,992.

WATER SUPPLY

Montague, Cal.—McDonnell & Co., of San Francisco, has purchase an issue waterworks bonds, \$9,000. J. S. Musgrove, town clerk.

Waterbury, Conn.—City Clerk Charles B. Tonkinson will receive sealed bids Dec. 5 for \$400,000 water bonds.

Rome, Ga.—City may install equipment in waterworks pumping station to generate electricity for power and lighting.

Detroit, Mich.—Board of water commissioners Nov. 12 rejected all bids for constructing pumping station, substructure, discharge conduit and miscellaneous work involving 27,000 cu. yds. of excavation and 33,000 lin. ft. of concrete tiles and 7,250 cu. yds. of reinforced concrete; also building and delivering 8 traveling water screen and auxiliary equipment, having capacity of 260,000 per minute. Work has been postponed. C. W. Fenkell, Office City Water Bd., engr.

Havre, Mont.—A proposition to issue \$75,000 water bonds will be submitted to the voters at an election to be held on Nov. 30.

Perth Amboy, N. J.—City council has voted to issue \$60,000 water improvement bonds.

Buffalo, N. Y.—See "Streets and Roads."

Saluda, N. C.—The Carolina State Bank of Saluda has purchased the city's waterworks bonds, \$3,000. M. A. Pace, mayor.

Mount Sterling, O.—George W. Tanner, village clerk, will receive sealed bids until noon Dec. 16 for \$10,000 water and light bonds.

Kingfisher, Okla.—Plans have been prepared for water works improvements here. Black & Veatch, engr., 507 Interstate Bldg., Kansas City, Mo.

Albany, Ore.—Water plant bonds to the amount \$200,000 were defeated at an election here.

Astoria, Ore.—Citizens voted in favor of issuing water system bonds, \$800,000.

Mitchell, S. D.—Waterworks bonds to the amount \$100,000 were purchased by the Mitchell Trust Co. R. E. Davis, city auditor.

Hillsboro, Tex.—An election has been called for Dec. 10 to vote on a proposition to issue \$40,000 waterworks system extension bonds. Wm. H. Knight, mayor.

Portsmouth, Va.—Capital issues committee has granted permission to the city to proceed with the issuance of water bonds, \$60,000.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Detroit, Mich.—*Allis-Chalmers Mfg. Co., West Allis St., Milwaukee, Wis., \$53,000, building and delivering f. o. b. cars at Detroit Water Works pumping station, 1 horizontal motor-driven centrifugal pumping unit, capacity 70,000 gal. per minute and 1 with 45,000 gal. capacity per minute. Board water comrs.

New York, N. Y.—*Caledino Constr. Co., 215th St. and 1st Ave., New York City, \$8,323, for hauling and laying water mains on Earle, 205th, 206th, 207th, 214th and Prince Sts., Queens Boro. Comrs. water supply, gas and electricity, Municipal Bldg., Manhattan.

Fremont, N. C.—Town has sold to Durfee, Niles & Co., of Toledo, electric light and street improvement bonds, \$25,000. L. H. Mumford, town clerk.

Tulsa, Okla.—*Tibbetts & Pleasant, Tulsa, for installing and improving iron pipe water mains, \$564,623, by city council.

Seattle, Wash.—*C. D. Cooper, 1427 L. C. Smith Bldg., for laying water mains in 11th Ave. S. W., \$24,628.75. Bd. pub. wks.

Cheyenne, Wyo.—*Orman Construction Co., of Pueblo, for the installation of water mains in Pershing Heights addition, by city commissioners.

LIGHTING AND POWER

Mount Sterling, O.—See "Water Supply."

Howe, Okla.—Town President E. S. McClain receiving bids, Dec. 2, electric light bonds, \$5,000.

Sumter, S. C.—The election held here recently was carried in favor of the proposition to issue \$350,000 electric light bonds.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Indianapolis, Ind.—*Welsbach Street Lighting Company of America, for providing and maintaining a minimum of 1,000 gas street lights at \$14.32 a year for each light. The cost of gas for each light is estimated at \$6.70 a year, making the total cost to the city \$21.02 a light. The lights will be put in the district bounded by St. Clair St. on the south, Fall Creek boulevard on the north, Pennsylvania St. and Talbott St. on the west and the Monon railroad on the east. Board of public works.

West Penn, Mass.—*Sanderson & Porter Co., of New York, for a \$5,000,000 power plant to be erected at Springdale by the West Penn Power Co.

Norfolk, Va.—*H. Alexander, Inc., 20 West 34th St., New York City, at \$9,700, for installing electric light and power system in steel storage building. Bureau Yards & Docks, Navy Dept., Washington, D. C.

St. John, N. B.—*F. S. Walker, 14 Church St., contract for alterations and addition to power plant. Dept. of Public Wks., Ottawa.

Turbin, Ont.—*The Fraser Brace Co., 83 Craig St. W., Montreal, the general contract for power development costing \$2,000,000 for the International Nickel Co., Copper Cliff, Ont.

FIRE

Urbana, O.—City has sold to the State Industrial Commission the semi-annual fire department bonds, \$15,000. H. M. Crow, city auditor.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Philadelphia, Pa.—*Wark Co., 1737 Filbert St., for fire protection system, \$4,598 (40 days). Bureau Yards & Docks, Navy Dept., Washington, D. C.

BRIDGES

Chattahoochee, Fla.—Florida state road department, Tallahassee, will soon receive bids for constructing reinforced concrete bridge across Apalachicola river near Chattahoochee; approximately 1,034 feet long, consisting of seven concrete arches of 110 feet clear span and a Strauss bascule left span with 100 feet clear channel. James Austin Mortland, bridge engineer, Tallahassee. Wm. F. Cocke, state road commissioner, Tallahassee.

Oglethorpe, Ga.—Bridge will be constructed over Flint river at cost of about \$100,000. Chairman, board of county commissioners.

Cambridge, Mass.—See "Sewerage."

Ada, Minn.—No bids were received Oct. 6 by D. E. Fulton, county auditor, for constructing county bridge No. 46, involving 17,350 cu. yds., one 10x4x24 reinforced concrete culvert and one mile of road leveling; also hauling gravel, total \$3,234.

Lexington, Miss.—Holmes county commissioners, J. H. Fuqua, clerk, are inviting bids for constructing bridge across Sugar Creek in District No. 3.

Billings, Mont.—Yellowstone county, at Nov. 5 election, voted in favor of issuing the following bonds: Huntley bridge, \$75,000; South bridge, \$25,000; fair grounds, \$25,000.

Livingston, Mont.—Park county, at Nov. 5 election, resulted in favor of issuing bridge bonds, \$50,000. Chas. A. Burg, county clerk.

Buffalo, N. Y.—See "Streets and Roads."

Kenton, O.—Hardin county has sold bridge bonds to the amount \$20,000, offered Oct. 4, to Prudden & Co., of Toledo. J. W. Tilley, county auditor.

Lima, O.—Council voted to proceed with the erection of the viaduct over the Lake Erie and Western Railroad at the Wapakoneta road crossing.

MISCELLANEOUS

Fort Collins, Colo.—Wants literature upon motor street flushers and street cleaning devices. W. B. Cheek, city engineer.

Anacostia, D. C.—Bureau Yards and Docks, Navy Dept., Washington, D. C., received no bids for 8,000 cu. yds. fill at Naval Air Station. Spec. 3647.

Attleboro, Mass.—E. H. Rollins & Sons, of Boston, successful bidder for an issue street railway loan act of 1918 bonds, \$22,500. T. J. Babcock, city treasurer.

Boston, Mass.—Construction Division, War Dept., Washington, D. C., plans to alter Commonwealth armory into hospital, about \$70,000.

Cambridge, Mass.—See "Sewerage."

Jackson, Miss.—Citizens, Nov. 5, voted in favor of issuing refunding bonds, \$90,000.

Quincy, Mass.—Improvement bonds to the amount \$199,500 purchased by Merrill, Oldham & Co., of Boston. W. E. Piper, city treasurer.

Austin, Minn.—An issue of Mower county judicial ditch No. 4 bonds, \$34,600, were sold Nov. 14 to the Wells-Dickey Company, of Minneapolis. O. J. Simmons, county auditor.

Foley, Minn.—Benton county has sold an issue \$16,000 ditch bonds to Kalman, Matteson & Wood, of St. Paul. J. E. Kasner, county auditor.

St. James, Minn.—Watsonwan county judicial ditch No. 29 bonds to the amount \$27,000, offered Oct. 7, have been purchased by the Minneapolis Trust Company. A. G. Countryman, county auditor.

Billings, Mont.—See "Bridges."
Coytesville, N. J.—William Norman, clerk of the school district of Englewood Cliffs, will receive sealed bids, Dec. 5, for \$18,000 school bonds.

Hoboken, N. J.—City Clerk Daniel J. Haggerty will receive sealed bids Dec. 3 for \$127,378 refunding bonds.

North Arlington, N. J.—Frederick W. Hoefler, clerk of the school district, will receive sealed bids Dec. 3 for \$26,000 school bonds.

Corning, N. Y.—Town defeated the proposition to issue town hall and jail bonds, \$10,000, at the election Nov. 5.

New York, N. Y.—Bureau Yards and Docks, Navy Dept., Washington, D. C., plans to rebuild scrap yard and navy yard here; will receive bids. Spec. 3657.

Erie, Pa.—City Clerk T. Hanlon receiving bids Dec. 6 for an issue Mill Creek improvement coupon or registered bonds, \$25,000.

Harrisburg, Pa.—Mayor Keister in the near future will select a committee from the Chamber of Commerce and from the Dauphin County Medical Society to make

a general survey of the city and county for a municipal contagious disease hospital.

Throop, Pa.—Borough Secretary M. J. O'Horo will receive sealed bids Dec. 4 for \$65,000 refunding bonds.

Philadelphia, Pa.—The Guaranty Trust Co. of New York, with an offer of 102,858, successful bidder for an issue of \$7,000,000 city bonds; premium of about \$200,000. Bonds are part of the \$6,000,000 transit loan of 1915 and a part of the \$42,000,000 loan of 1916 for general municipal improvements. Plans for further bond sales will be taken up by the Capital Issues Committee at Washington.

BIDS RECEIVED AND CONTRACTS AWARDED.

(*Indicates Contracts Awarded.)

Baldwin, Fla.—*Willis & Sons & McCarthy, West Palm Beach, Fla., for constructing 95 miles of main and lateral ditches in Baldwin District at approximately \$200,000.

Chester, Ill.—*W. Waters & Sons, 4977 Kemper Park, St. Louis, and *W. H. Bates, 1381 Belt Ave., St. Louis, for constructing drainage system on Kaskaskia Island, Randolph county, at approximately \$15,000.

Morganfield, Ky.—*Crane Contracting Co., Omaha, Neb., for constructing Geo. Smith public ditch, involving 4½ miles of open ditch, containing approximately 400,000 cu. yds. earth excavation at \$45,000.

Granite Falls, Minn.—*D. E. Dougherty, Litchfield, Minn., for Judicial Ditch No. 11: 483 ft. 4-in. tile, 1,200 ft. 5-in. tile, 1,875 ft. 6-in. tile, 3,400 ft. 7-in. tile, 2,400 ft. 8-in. tile, 2,500 ft. 9-in. tile, 5,500 ft. 10-in. tile, 1,400 ft. 11-in. tile, 800 ft. 16-in. tile, \$6,700. G. H. Wilson, co. aud.

Wards Island, N. Y.—*Cyclone Fence Co., 715 Woodward Bldg., Washington, D. C., for building fence and gates, \$6,006 (50 days). Bureau Yards and Docks, Navy Dept., Washington, D. C.

Randolph, Wis.—*Wisconsin Drainage Co., Elkhorn, Wis., for constructing Randolph township ditch at \$9,500.

TOO LATE FOR CLASSIFICATION

BIDS ASKED FOR

STATE	CITY	REC'D UNTIL	NATURE OF WORK	ADDRESS INQUIRIES TO
STREETS AND ROADS.				
Minn.	St. Paul	10:30 a.m., Dec.	9.. Grading and improving streets	H. W. Austin, Purch. Agent.
Wash.	Olympia	2 p.m., Dec.	9.. Surfacing with gravel approximately 6 mi. of co. highway	James Allen, State Highway Comr.
SEWERAGE.				
La.	New Orleans	noon, Dec. 23	Sewerage improvement	F. S. Shields, Secy., Sewerage & Water Board.
Miss.	Pascagoula	Dec. 25	Construction of sanitary and storm sewer	N. A. Kramer, Engr., Magnolia, Miss.
WATER SUPPLY.				
N. C.	Wilmington	Dec.	2.. Improvement and enlargement of city water plant	City Clerk.
N. Y.	New York	11 a.m., Dec.	7.. Completion of contract to lay a 12-in. water main across the East River, and haul and lay water mains and appurtenances in the Borough of the Bronx	Nicholas J. Hayes, Comr.
LIGHTING AND POWER.				
Ill.	Chicago	11 a.m., Dec.	4.. Furnishing sundry kinds and sizes of incandescent lamps	Wm. G. Keith, Comr., Gas & Electricity, City Hall, Chicago, Ill.
FIRE EQUIPMENT.				
N. Y.	New York	10:30 a.m., Dec.	4.. Furnishing and delivering rubber fire hose	Thos. J. Drennan, Fire Comr.
BRIDGES.				
Okla.	Mangum	3 p.m., Dec.	2.. Construction of bridge and culvert	Co. Engr., Hobart, Okla.
MISCELLANEOUS.				
R. I.	Newport	5 p.m., Dec.	5.. Collection and disposal of city refuse	F. N. Fullerton, City Clk.
O.	Cincinnati	noon, Dec.	6.. Collection, removal and disposal of garbage, dead animals	Chas. F. Hornberger, Dir. of Pub. Serv., Cincinnati, O.
Ind.	Brazil	noon, Dec.	12.. Construction of a drain, over 8 miles in length, in two townships	Wm. S. Rawley, Const. Comm.

STREETS AND ROADS.

Pontiac, Mich.—If the capital issues committee will grant permission for the issuance of \$250,000 worth of county bonds, nine road projects will be undertaken in Oakland next year, completing the system of roads proposed under the million dollar bond issue, voted three years ago.

St. Ignace, Mont.—State Highway Engineer Holman and two assistants are making surveys of the roads in Flathead county with a view to making certain improvements next season.

Cincinnati, O.—See "Water Supply."
Bellefontaine, Ohio.—Public improvements estimated to cost more than \$600,000 are in prospect in Bellefontaine and Logan counties next year. The paving of Stanton Ave. and Evansville St. are on the list for early improvements, and in addition to this paving there is contemplated extensive improvement to the water works new pumps, improvement of the supply and possibly the installation of meters on every service in the city. In the county two extensive highway improvements are planned. The concrete

paving of 13 miles of roadway from Huntsville, past Indian Lake Park to Lakeview, and thence on to the county line, is estimated to cost from \$35,000 to \$40,000.

New Castle, Pa.—The city engineer has been instructed by council to make application of the United States Highway Council for permission to make the following improvements in 1919. They include the following at the estimated cost of \$290,000: repairing of Wallace Ave., \$21,800; Jefferson St., \$15,300; Highland Ave., \$22,000; Creston Ave., \$20,000; Cedar St., \$21,500; Liberty St., \$90,000; Neshannock Creek widening, \$100,000. He was also instructed to ask permission to secure the following supplies: ten cars of brick, five cars cement, five cars slag, five cars sand and 10,000 gallons of tarvia.

Oakville, Tex.—Bigham Bros., of Rogers, have purchased the following Live Oak county bonds: Road Dist. No. 5, \$10,000; Road Dist. No. 6, \$50,000.

Olympia, Wash.—Steps are under way to lay before the state highway commission the needs of the Olympia highway extension program and to seek to

secure from the next legislature an appropriation to provide for the completion of the connecting link in the road between Lake Quinault and Forks in western Clallam county.

Walla Walla, Wash.—The city commissioners have decided to establish grades on W. Sumach St., between Fifth and Sixth Sts.

Wisconsin.—The Wisconsin highway commission has selected the following federal aid projects for improvements in 1919: Milwaukee County, Co. seat Milwaukee, Wis.—Building a concrete arch on trunk highway No. 74, Calumet road, located at what is known as the High bridge on the Calumet road; est. \$84,000; due from government and state, \$56,000. Monroe County, Co. seat Sparta, Wis.—(a) Grading, draining and culverting trunk highway No. 27, Sparta-Cashton road, commencing at Main St. in village of Cashton, thence n w to point in N E ¼ of sec. 13, twp. 15 north range 4 west; est. \$27,000; due from Govt. and State, \$18,000. (b) Grading, draining and culverting trunk hwy. No. 12, Tomah-Camp Douglas road, commencing at N W ¼ corner of sec. 34, twp. 17 north, range 1

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TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., November 12, 1918.—Sealed proposals will be opened in this office at 3:00 P. M., December 10, 1918, for remodeling toilet room, etc., in the United States Post Office, Hannibal, Mo., in accordance with drawing and specifications, copies of which may be had at this office or at the office of the Custodian, Hannibal, Mo., in the discretion of the Supervising Architect. JAMES A. WETMORE, Acting Supervising Architect.

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west, thence s e to point on w line of sec. 35, thence s to Pringel's house; est. \$13,500; due from Govt. and State, \$9,000. Oconto County, Co. seat, Oconto, Wis.—Grading, draining, culverting and graveling, 15 ft. in width, trunk hwy. No. 22, Oconto-Shawano road, commencing at Stiles Junction, thence w to Oconto Falls. Oneida County, Co. seat, Rhinelander, Wis.—Grading, draining and culverting trunk hwy. No. 14, Rhinelander-Antigo road, commencing at center of sec. 27, twp. 36 north, range 9 east, thence s to s side of sec. 36, twp. 36 north, range 9 east; est. \$24,000; due from Govt. and State, \$16,000. Outagamie County, Co. seat, Appleton, Wis.—Grading, draining, culverting and paving with concrete, 16 ft. in width, trunk hwy. No. 18, Appleton-Dale-Medina road, commencing at New London road, thence w about 4 1/2 miles; est. \$88,200; due from Govt. and State, \$58,800. Ozaukee County, Co. seat, Port Washington, Wis.—Grading, draining, culverting and paving with concrete, 16 ft. in width, trunk hwy. No. 17, Port Washington-Cedarburg road, commencing at e line of sec. 30, twp. 11 north, range 22 east, thence w to Milwaukee River Bridge in sec. 25; est. \$35,400; due from Govt. and State, \$23,600. Pepin County, Co. seat, Durand, Wis.—Grading, draining, culverting and surfacing with shale or gravel, 15 ft. in width, trunk hwy. No. 34, Mondovi-Durand road, commencing at point where No. 34 crosses the county line, thence w approx. 1 1/2 mi.; est. \$8,700; due from Govt. and State, \$5,500. Polk County, Co. seat, Amery, Wis.—(a) Grading, draining, culverting and partly surfacing trunk hwy. No. 35, Fred-erie-Siren rd. commencing at n co. line, thence s about 3 mi.; est. \$18,000; due

from Govt. and State, \$12,000. (b) Grading, draining, culverting and partly surfacing trunk hwy. No. 14, St. Croix Falls-Barron road, commencing at s w corner of sec. 4, twp. 34 north, range 17 east, thence s e to e line of sec. 35, twp. 34 north, range 16 west; est. \$54,000; due from Govt. and State, \$36,000. Portage County, Co. seat, Stevens Point, Wis.—(a) Grading, draining, culverting and surfacing with gravel, 15 ft. in width, trunk hwy. No. 18, Plover-Waupaca road, commencing at intersection of trunk lines Nos. 18 and 10, thence e about 6 mi.; est. \$30,000; due from Govt. and State, \$20,000. (b) Grading, draining, culverting and surfacing with gravel or other material, 15 ft. in width, trunk hwy. No. 10, Stevens Point-Wausau road, commencing at n county line, thence s to point in N E 1/4 of sec. 23, twp. 25 north, range 7 east; est. \$36,000; due from Govt. and State, \$24,000. Price County, Co. seat, Philips, Wis.—Grading, draining, culverting and partly graveling trunk hwy. No. 14, Prentice-Rhineland road, commencing at Clifford, thence w approx. 6 mi.; est. \$21,000; due from Govt. and State, \$14,000. Richland County, Co. seat, Richland Center, Wis.—Grading, draining, culverting and concreting, 16 ft. in width, trunk hwy. No. 11, Richland Center-Spring Green road, commencing at present concrete overflow, thence n w to present macadam, approx. 2 1/2 mi.; est. \$51,000; due from Govt. and State, \$34,000. Rock County, Co. seat, Janesville, Wis.—Grading, draining, culverting and concreting, 16 ft. in width, trunk hwy. No. 10, Janesville-Beloit road, commencing at North Federal construction limits of Beloit, thence n approx. 6 mi.; est. \$110,000; due from Govt. and State, \$73,400. Sauk County, Co. seat, Baraboo, Wis.—(a) Relocating, grading, draining, culverting and graveling trunk hwy. No. 33, La-Valle-Wonewoc road, commencing at county line near Wonewoc, thence s e to intersection with trunk hwy. No. 58; est. \$51,000; due from Govt. and State, \$34,000. (b) Relocating, grading, draining, culverting and graveling trunk hwy. No. 33, Albeman-Reedsburg road, commencing at Covered Bridge, n of Ableman, thence w to Morley Crossing with the C. & N. W. Ry.; est. \$21,000; due from Govt. and State, \$14,000. Sawyer County, Co. seat, Hayward, Wis.—Grading, draining, culverting and partly surfacing trunk hwy. No. 40, Radisson-Couderay road, commencing at Radisson, thence n w along new location parallel to the Omaha Ry., toward Couderay; est. \$27,000; due from Govt. and State, \$18,000. Shawano County, Co. seat, Shawano, Wis.—Grading, draining, culverting and graveling, 15 ft. wide, trunk hwy. No. 16, Shawano-Wittenberg road, commencing between secs. 22 and 27, town of Richmond, thence w approx. 7.7 mi.; est. \$58,500; due from Govt. and State, \$39,000. Sheboygan County, Co. seat, Sheboygan, Wis.—(a) Grading, draining, culverting and paving with 16-ft. concrete, trunk hwy. No. 17, Sheboygan Falls-Cedar Grove road, commencing at Junction of Hingham and Gibbsville roads, thence s about 1.4 mi.; est. \$27,000; due from Govt. and State, \$18,000. (b) Grading, draining, culverting and paving with concrete, 16 ft. in width, trunk hwy. 23, Sheboygan Falls-Plymouth road, commencing at section line between secs. 35 and 26, twp. 15 north, range 22 east, thence w about 3 mi.; est. \$63,000; due from Govt. and State, \$42,000. Taylor County, Co. seat, Medford, Wis.—Grading, draining, culverting and partly surfacing with gravel trunk hwy. No. 13, Prentice-Medford road, commencing 1/2 mi. n of North Town line to Chelsea, thence s approx. 11 1/2 mi. to city limits of Medford; est. \$33,900; due from Govt. and State, \$22,600. Trempealeau County, Co. seat, Whitehall, Wis.—Grading, draining, culverting and graveling, 15 ft. in width, trunk hwy. No. 53, Whitehall-Fountain City road, commencing at village limits of Whitehall, thence w to village limits of Independence; est. \$55,800; due from Govt. and State, \$37,200.

Vernon County, Co. seat, Viroqua, Wis.—Grading, draining, culverting and surfacing with stone or gravel, 15 ft. in width, trunk hwy. No. 27, Viroqua-Cashton road, commencing at railway crossing on w line of sec. 32, twp. 13 north, range 4 west; est. \$36,000; due from Govt. and State, \$24,000. Vilas County, Co. seat, Eagle River, Wis.—Grading, draining, culverting and graveling trunk hwy. No. 10, Arbor Vitae-Mercer road, commencing at w county line, thence s e to Buck Bridge in s e corner sec. 14, twp. 42, range 5; est. \$30,000; due from Govt. and State, \$20,000. Washburn County, Co. seat, Spooner, Wis.—(a) Grading, draining and culverting trunk hwy. No. 51, Spooner-Cumberland road, commencing at n end of Federal Aid Contract No. 29, thence n about 2.800 ft.; est. \$3,000; due from Govt. and State, \$2,000. (b) Grading, draining, culverting and partly surfacing trunk hwy. No. 11, Spooner-Rice Lake road, commencing at S 1/4, corner of sec. 31, twp. 39, range 11, thence e and s to point about 2 1/2 mi. s of where No. 11 turns s from No. 24; est. \$25,500; due from Govt. and State, \$17,000. (c) Grading, draining, culverting and partly surfacing trunk hwy. No. 11, Spooner-Superior road, commencing at n county line, thence s about 1 mi.; est. \$8,400; due from Govt. and State, \$5,600. Washington County, Co. seat, Hartford, Wis.—Grading, draining, culverting and paving with concrete, 16 ft. in width, trunk hwy. No. 35, West Bend-Milwaukee road, commencing at junction of Old Fond du Lac road and West Bend road, thence n about 3 mi.; est. \$62,400; due from Govt. and State, \$41,600. Waukesha County, Co. seat, Waukesha, Wis.—(a) Grading, draining, culverting and paving with concrete, 16 ft. in width, trunk hwy. No. 41, Waukesha-Milwaukee road, commencing at Goercke's Corners, thence s w to construction limits in Waukesha city; est. \$52,800; due from Govt. and State, \$35,200. (b) Grading, draining, culverting and paving with concrete, 16 ft. in width, trunk hwy. No. 19, Watertown Plank road, commencing at Goercke's Corners, thence n w about 1 1/2 mi. Waupaca County, Co. seat, Waupaca, Wis.—Grading, draining, culverting and surfacing with gravel or other material, 15 ft. in width, trunk hwy. No. 19, Waupaca-Weyauwega road, commencing at e end of the macadam in town of Lind, thence e to concrete in village of Weyauwega; est. \$28,500; due from Govt. and State, \$19,000. Waushara County, Co. seat, Wautoma, Wis.—(a) Grading, draining, culverting and surfacing with gravel or other material, 15 ft. in width, trunk hwy. No. 10, Westfield-Coloma road, commencing at s county line, thence n about 4 mi.; est. \$21,000; due from Govt. and State, \$14,000. (b) Grading, draining and culverting trunk hwy. No. 21, Wautoma-Red Granite road, commencing at e construction limits in Wautoma, thence s e to the railway crossing in Red Granite; est. \$32,250; due from Govt. and State, \$21,500. Wood County, Co. seat, Grand Rapids, Wis.—Grading, draining, culverting and surfacing with gravel or other material, 15 ft. in width, trunk hwy. No. 13, Friendship-Grand Rapids road, commencing at s county line, thence n about 4.7 mi.; est. cost, \$24,000; due from Govt. and State, \$16,000.

Quebec, Que.—For the construction of new pavement and water works, city council contemplates an expenditure of \$274,000.

SEWERAGE.

Cincinnati, O.—See "Water Supply."

WATER SUPPLY.

Bellefontaine, O.—See "Streets and Roads."

Elyria, O.—City officials are asking the Capital Issues Committee at Cleveland to approve a \$350,000 bond issue for waterworks improvements.

Quebec, Que.—See "Streets and Roads."

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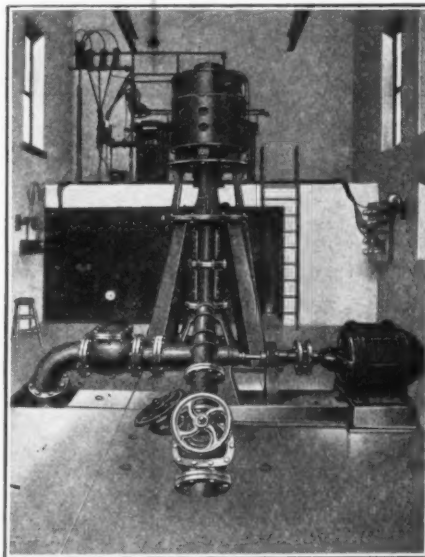
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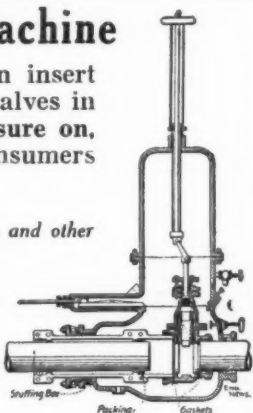
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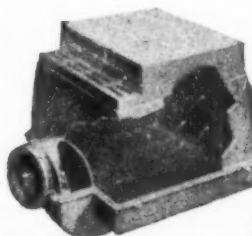
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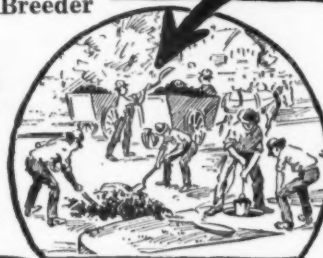


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